The New York State

Conservationist

State of New York Conservation Department

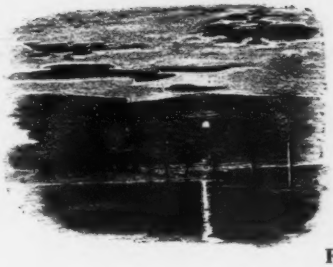
April-May 1957

Song of Spring

The New York State

Conservationist

APRIL-MAY, 1957



A Prediction

All of us are familiar with the term "sixth-sense." We've heard about it since we were knee high to the proverbial grasshopper and lately we've been reading of the work of a group of scientists who, having glamorized the phenomona as extra-sensory perception, are probing into its mysteries, one manifestion of which is the ability to predict future events.

Now, we don't believe that we're over-endowed in the "sixth-sense" department, nor, as a matter of fact, that it's necessary to call in extra-sensory perception but we are getting some strong "vibrations" and we would like to make a prediction: That in the reasonably near future a license will be required to take fish by angling from the marine waters of our Atlantic coastal states.

Some of the reasons for so predicting; some of the benefits that can thus be secured are set forth in A. H. Underhill's article in this issue of THE CONSERVATIONIST. Boiled down, it comes to this—our marine fisheries resources are too valuable; the pressures upon them too great and increasing too rapidly to much longer delay the adoption by Atlantic coastal states of a co-ordinated program of marine fisheries management and research—and that will take money; more money than is presently available to the Fish and Wildlife Service for such work or to individual states through Federal aid.

Some of the benefits, as Underhill points out, are immediate—stepping up pollution control, strengthening law enforcement, creation of new fishing grounds, construction of public fishing piers, etc. Of major importance, however, is the development of research facilities and program to guide future management.

It's ironic that research, the greatest of these needs, should be the hardest to sell. We wonder sometimes at the thought processes of the "Joe Sportsman" who rises in the morn', zips off his whiskers with the latest in electric razors, breakfasts in thermostatically controlled comfort surrounded by a gleaming array of automatic utensils, glides swiftly off to work in his 240-horsepower super-synchromesh special, along a safety-engineered expressway, supervises, on the job, some phase of manufacturing automation, takes time out at lunch to read about a three and three quarter hour, coast to coast test flight of a jet passenger 'plane, returns home that night and attends the regular meeting of the "Ship and Shore Fishing Club" where he vehemently denounces a research program as "so much money down the rat hole."—Editor

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A NEW DAY—

The Proposed Reorganization of the Conservation Department to Meet Effectively the Problems in Proper Management of Our Natural Resources — Now and In the Future

THE New York State Conservation Department is charged with the responsibility of developing and managing the natural resources of the State—the soil, the water, the forests, and the fish and wildlife—in such manner (borrowing a classic definition) as to derive the greatest good for the greatest number for the longest possible time. To meet this responsibility, the Department is presently organized in five operating divisions—Lands and Forests, Fish and Game, Parks, Water Power and Control and the Saratoga Springs Reservation and five staff units—Finance, Conservation Education, Personnel, Methods and Procedures and the office of the Secretary.

Of the operating Divisions, Parks, Water Power and Control, and Saratoga Springs Reservation have specialized areas of responsibility and operate more or less independently within these bounds. Of more immediate concern to the Department are the responsibilities and programs of its Divisions of Lands and Forests, and Fish and Game, each operating through separate and independent district office systems, developed over the years to meet, in a piecemeal fashion, the changing needs of the time.

But "the hare of time" has out-raced the Department's ability to meet, adequately, the demands in these vast fields of conservation. A tremendous growth in population, expansion of industry, radical changes in the living patterns and habits of our people, the continuing evolution in farming practices—all combine to confront the Department with the greatest challenge of its history in developing and administering an effective conservation program; not only on State-owned lands and waters but, in co-operation with the owners, on privately-owned lands as well.

Coincident with the development of these demands there has elvolved a wholly new concept in conservation; a recognition that you cannot "go it alone" in the development and management of any single natural resource without involving and vitally affecting all associated natural resources. One cannot, for instance, manage a forest stand without affecting, in some manner, the habitat for fish and game. Nor can the soil conservationist rearrange the land-use pattern of a farm without reference to the optimum value of wetlands, the fate of flowing streams or the best program for woodlot development. In like manner, the wildlife managers cannot set up a program of habitat improvement for fish and game without considering the influence of land-use practices with respect to soils, agricultural practices and forestry.

Boiled down, this recognition of the inter-dependence of our natural resources presents every conservation administrative agency seeking the most constructive approach to the problems of today and tomorrow with a new pattern or guide—that of *multiple use.*

As presently organized, the Department's Divisions of Lands and Forests, and Fish and Game are not well prepared to meet this modern multiple use challenge—either on State-owned lands or, of increasing importance, on privately-owned lands in the State. Together, these Divisions administer their affairs through no less than 40 separate district offices; 15 for Lands and Forests and 25 for Fish and Game—the latter subdivided into 11 law enforcement districts, 9 game management districts and 5 fisheries management districts.

These district offices are presently located in 28 different cities or villages and, with few exceptions, without reference to the location of allied district headquarters. District foresters and district game managers having responsibility for the same county may have headquarters separated by 50 to 150 miles. Moreover, in only three instances within the Division of Fish and Game are the district headquarters of fish, game and law enforcement situated together.

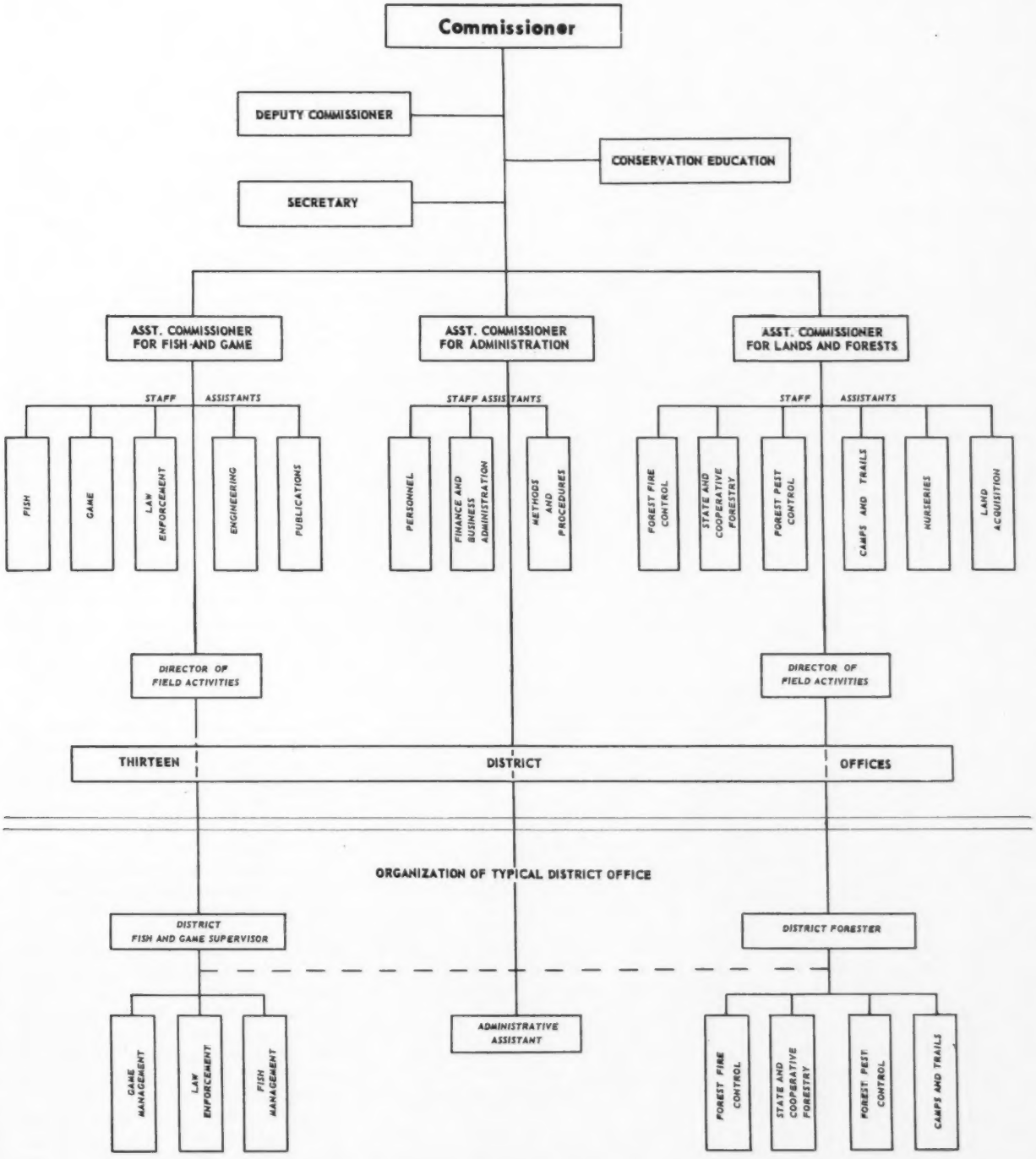
Under these circumstances of physical separation, the ability of district personnel in Lands and Forests, and in Fish and Game to co-ordinate their efforts in "multiple use" planning and management of

(*Continued on page 4*)

Proposed Conservation Districts

District headquarters have not been determined

Proposed Central Office and Field Reorganization



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natural resources on both State- and privately-owned lands is seriously limited. Moreover, this limitation of opportunity in the field carries through to central office administration where a multiplicity of separate bureaus are "bogged down" in the mechanics of handling day-to-day details at the expense of properly planning co-ordinated programs and advising administration on future policy.

Recognizing these basic weaknesses throughout the organization of the Divisions of Lands and Forests, and Fish and Game, the Conservation Department called upon the Administrative Management Unit of the State Division of the Budget to co-operate in analyzing the present organization of the Department and to jointly develop more effective programs, policies, organization and operations to meet the need for multiple use planning and management of our natural resources —for today and for the future.

The Division of the Budget assigned a survey team to this task. Their job has been completed and their report and recommendations carefully developed with Conservation Commissioner Mauhs and his staff, has been submitted and accepted. It was no arm chair operation. The job was carried out through long hours, weeks and months of painstaking analysis with central and district office personnel of every phase of the forestry and wildlife programs. It involved numerous trips to all sections of the State to study first hand the district office problems and to inspect the work going forward on the land in forestry and in fish and game research and management—on State lands and on privately-owned lands. It was a thorough and conscientious job, deserving of the gratitude of this Department and of the people of the State of New York who will be the beneficiaries of a more effective program for the conservation and management of our natural resources.

The accompanying map of the State shows the manner in which it is proposed to bring together the present 40 district offices of Lands and Forests, and Fish and Game into 13 combined districts. The chart on the facing page shows the proposed administrative "streamlining" of the central office and carries through to the organization of a typical district office. Note the close association of forestry and fish and game supervisors and their staffs, enabling co-ordination in planning and managing their programs in the district. Note too, that the public increasingly interested in conservation—whether they be sportsmen, school children, farmers, woodlot owners or vacationers can secure—at one place—the information or the technical assistance they are seeking in any phase of conservation.

—A. W. BROMLEY

THE NORTHWAY

by John W. Johnson,
Superintendent of Public Works

WE people of the State of New York are rightfully proud that here in the Empire State lies the most famous and unique forested area in the world—the New York State Forest Preserve in the Adirondacks. Rich in scenic beauty, valuable almost beyond comprehension for flood control, a mecca for fishermen and hunters, hikers and campers and all who love the great outdoors, the nation's headquarters for Winter sports and the vacation dream each year of millions of our citizens, the Adirondacks extend a wonderful welcome the year around, and has done so for many scores of years—since the days of the stage coach, the early railroads and the Model "T."

But there weren't so many people in those days, and the "thousands" fortunate enough to afford an Adirondack vacation, though subjected to some discomfort en route, managed to get there—in time—over the mountain roads. Today, the thousands have become millions and the Model "T" has come of age.

Moreover, some of the Adirondack highways presently cause traffic bottlenecks which could seriously jeopardize our safety in time of National emergency. A bombing with a resultant major fire in the Forest Preserve could easily level this great forested area.

What can be done to remedy this situation, remove some of these bottlenecks, these hazards to our safety and, at the same time, make the trip to the Adirondacks and the trip back home a safe and pleasurable part of a vacation?

The New York State Department of Public Works believes that the Northway, presently planned as an integral link in New York State's Interstate and Defense System of highways, will help greatly not only to remove some hazardous bottlenecks and to prepare for the national defense, but also to bring the scenic beauty of the Adirondacks to more of our people. Moreover, the proposed Northway has been designed to keep faith as nearly as can be, with the "Forever Wild" character of the Forest Preserve.

The Northway, a Federal and State project, is being designed to conform with two requirements of the Federal Bureau of Public Roads, that is that first, this highway shall be in as direct a course as terrain permits without marring the beauty of the area, and second, that this highway shall supplement rather than supplant existing highways.

The valleys of the Adirondack regions are narrow and closely confined by the area's rugged mountains. Few of the valleys are wide enough to accommodate an interstate highway without resorting to extensive construction of bridges and retaining walls and the relocation of stream channels. All these factors make it impossible to construct the Northway without utilizing a small portion of Forest Preserve lands in the Adirondack Park.

Highway design standards are continually improving and have made marked progress even since the construction of the New York State Thruway. Today, for example, multiple lane divided highways are designed, as has been the Northway, as two separate roadways with the median strip between them left in its natural state. The result is an eye-pleasing, as well as a safer highway. In forested areas, this not only adds to the beauty and the pleasure of the drive, but in addition, is usually the least expensive.

Our objective in design is simple. We wish to make all interstate routes examples of ideal construction with a minimum disruption of natural conditions. The Northway section, where it passes through the Forest Preserve, will be designed in this manner. All existing roads will be separated from the Northway and no new access will be provided within the Forest Preserve which does not now exist. Cuts and fills will be held to the smallest number compatible with acceptable grades, and slopes will be planted with native trees and shrubs. Clearing and cutting of trees will be kept to a minimum. As a result, the Northway will offer parkway characteristics and will not be cluttered with billboards, gas stations, motels, restaurants, or other commercialization. A few years after the slopes have been planted, vegetation, trees and shrubs will have grown and will give the slopes a natural appearance. Exposed to the motorists' view will be a close-up of the forest lands panorama, and the Northway will most surely add to the popularity of the already famous Adirondack area.

The proposed location for the Northway from Albany to Warrensburg lies in the wide Hudson Valley near existing Route 9. It will there serve areas already de-

veloped and those expected to expand in the future. North of Warrensburg, Route 9 traverses some rough terrain, going through narrow passes and around mountain peaks. For this reason, it was necessary to chart a new course for the Northway.

Four possibilities were studied (see map). As a consequence of preliminary surveys, the rugged character of the terrain east of Lake George eliminated that area. Other preliminary surveys eliminated proposals A and D, the extreme easterly and westerly routes shown on the map. A and D were the longest of the four proposed routes and they, too, traversed rough terrain. Remaining were B and C. The final selection (C) was made on the basis of detailed studies of aerial photos and photogrammetric maps. (Photogrammetry is a mapping system based on aerial photography.)

Route C, the final selection made by the Department of Public Works, continues north from Warrensburg along the east bank of the Schroon River to South Horicon and up the valley to Brant Lake; thence northerly about a mile east of and parallel to Schroon Lake, coming into the Schroon River Valley at Severance, thence north to Schroon Falls, Schroon River, North Hudson, New Russia, Elizabethtown, Keesville and Plattsburg.

Among the advantages of this route are the following:

1. It is the shortest of the alternate routes.

2. It will offer adequate service to present and future developments in the north country.

3. Its maximum elevation is one thousand one hundred seventy (1,170) feet, with only about two miles of highway at an elevation of over one thousand (1,000) feet.

4. The Northway, using this route, will pass through less than twenty-five (25) miles of Forest Preserve land and will require less than four hundred (400) acres of Forest Preserve land, although only about half of this acreage will be involved in actual construction. The balance will remain undisturbed.

5. This route will cause the least possible disturbance to State lands within the Adirondack Park.

While we in the Department of Public Works recognize that the construction of the Northway along proposed Route C will temporarily disturb a small portion of Forest Preserve land, I believe this must be considered and measured in connection with the welfare of all our citizens and the safety of our nation. I believe, too, that we must recognize what this highway will mean to the future well-being of the north country of our State. I believe we shall all be proud of this modern, toll-free, scenic highway.

Finger Lakes Rainbows

Tagging Studies and Future Management

by Dr. U. B. Stone,
District Fishery Manager, Conservation Department
and W. L. Hartman,
Research Assistant, Cornell University

This is the second in our series of three articles concerning rainbow trout in the Finger Lakes region of New York State. The first reported on the spawning habits of rainbows; the third, which will appear in the June-July issue, will review the life history of this species—from egg to adult.

HAVE you ever fished a Finger Lakes tributary for rainbows on opening day? Maybe you figured you had rocks in your head for putting up with that kind of competition. Maybe you wondered what your chances would be of catching a rainbow in the lake, either then or later in the season.

The fishery technician might also reflect on this and other questions, although for different reasons. What proportion of the total run is caught? Could fishing opportunities be increased without overfishing the populations? Are present legal restrictions adequate, or necessary? These are important questions for the angler, too, because the answers have a direct bearing on his fishing time afield.

Going on five years now, Department and Cornell University fishery biologists have carried out the field work preparatory to finding the answers. The operation is often spectacular for it involves a preseason sampling of the main rainbow spawning tributaries of the Finger Lakes: Grout Brook (Skaneateles), Catherine Creek (Seneca), Cold Brook (Keuka), and Naples Creek (Canandaigua). Spectacular is the proper word, for in the eight to ten March days the field crew handles an average of 750 squirming trout weighing 2,700 pounds. This high quality fishing requires a special lure—electricity. Fishing with electricity is not defined as "angling" in the Conservation Law, so don't rush down and buy a generator to go in your tackle box to use on those days when trout are hard to come by.

The procedure for obtaining and processing the trout is shown in the accompanying picture story. Obtaining lengths, weights, scale samples for age determination, condition of the sex organs, and tagging are routine to many fish management operations. We are particularly interested in this article in the results of the tagging.

The ultimate success of the tagging project depends on fishermen's co-operation in reporting the capture of tagged fish.* Tag returns are obtained from two main sources: (1) Letters from fishermen and (2) creel census reports. These returns form the basis for determining the percentage of harvest—obtained by dividing the number of returns by the number of fish tagged. In other words, if 10 per cent of the tagged fish are recaptured, it is concluded that about 10 per cent of the entire population was harvested by fishing. Since all tags aren't reported the percentages obtained are minimum.

A comparison of the percentages of recapture for the different waters is shown in Figure 1. The angling harvest of the spawning stock of rainbow trout is relatively uniform in the four lakes, ranging from a low of 18 per cent in Seneca and Keuka to a high of 26 per cent in Canandaigua. Stream recovery for all waters was uniform—about 14 per cent. Lake recoveries were relatively small (5 per cent) with the exception of Canandaigua. The high lake recovery in Canandaigua may be due to the concentration of lake fishing pressure at the south end, where the spawning run moves in and out of Naples Creek. Most of the lake recoveries are from this part of the lake.

The evidence shows that the utilization of the spawning population is not great once the fish have returned to the lake. This is even further emphasized by the scarcity of returns after the year of tagging. For example, of the 448 fish tagged in 1954 at Catherine Creek, only 2 per cent were reported in 1955. The obvious implication is for greater opportunity for exploitation of the trout while they are in the streams. However, there is good reason to exercise restraint in this direction, for the time being, at least. The present opening date, April 1, usually falls after the peak of rainbow spawning in a normal season; i.e., present runs are maintained with something less than full protection by closed season. Further encroachment into the spawning periods seems unwise because of the extremely heavy fishing pressure they support. We do not yet know the minimum number of fish that should spawn to fully utilize the tributaries as nurseries and we do not think that experimenting with greater exploitation should start here.

Low lake returns are partly due to the reduction of the spawning stock by stream angling as well as by natural mortality, typically heavy in spawning trout and salmon. Tag returns from the lake fish tell only a partial story about lake fishing, because these returns do not represent the young, maturing fish that have never been upstream to spawn (and perhaps be tagged). Reports suggest that the overall lake fishing success is low, so

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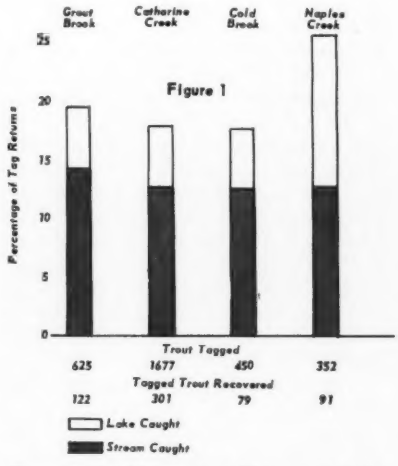


Example: Fishermen took 18 per cent of the Seneca Lake-Catharine Creek tagged trout

*Send those tags in! Place the tag numbers or preferably the tag along with the date and locality of capture in an envelope. Mail it to the Conservation Department, Albany. You will receive in turn a letter describing the interesting life history of your fish.

With the arrival of Department and Cornell University fishery biologists at Catherine Creek in mid-March, tagging operations begin. From a portable gasoline generator, long, well-insulated cords carry current to electrodes in the stream. An electric field is set up between the positively charged long-handled dip net and a toboggan-like piece of plywood carrying the negative. Fish influenced by the electric field are drawn toward the shocking net and are easily captured. Some are momentarily stunned but soon revive. Pictures show what a rainbow goes through from capture to release. Fred Mohn and The Ithaca Journal provided the pictures.

Successful electro-fishing

Captures held in "bathinette"

Checking for sex, condition

Getting the accurate weight

Below, measuring the fish

Scale sample is put in envelope; a tag clinched around lower jaw

Below, the fish is released

(Continued from page 6)

it is not likely that consideration of this group would materially change the picture. Perhaps the stocks of rainbow are too "dilute" to produce good fishing. Perhaps lack of adequate "know-how" and emphasis towards catching this species are also involved.

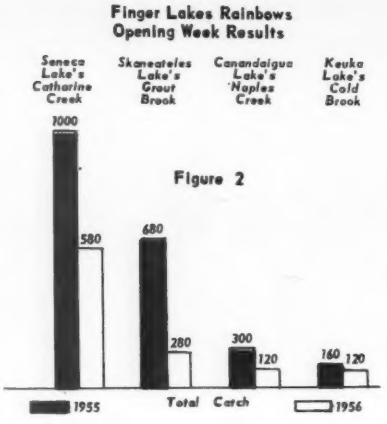
How much recreation does this catch represent? Most tagged fish taken from the streams were reported in April, with the bulk coming from the opening two weeks. The lake catch of tagged fish covers the entire five months fishing, but mostly June through August. Yet even with the relatively long period of lake fishing, returns were less than half those from stream fishing (Canandaigua excepted).

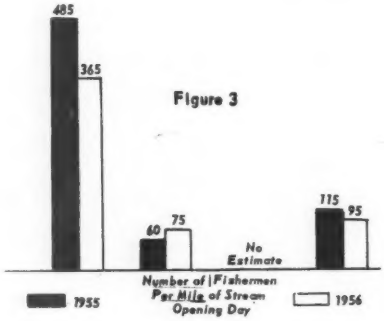
The fishery technician is always under pressure to provide more fishing. Extension of the lake fishing season may help meet such a demand. An additional two months lake fishing might not greatly increase the catch, although the cool waters in the Fall months could prove more favorable for rainbow fishing than Summer months. It is certain that such an extension would represent a sizeable increase in fishing days.

A trial extension of the rainbow season was carried on in Skaneateles Lake last Fall. During the regular lake fishing season 15 tagged fish were reported. In the extended season, September 10 through November 30, only two additional tags were sent in. The meager information does not suggest any great increased catch will occur. However, it may be pointed out that Fall fishing for rainbows in the Finger Lakes is a new feature and efficiency of methods and fishing pressure may increase with time. Also, changes of angling regulations on rainbow trout might affect lake trout and other associated species. Such possibilities must be considered in managing the fishery as a whole.

Some concept of the total catch in the spawning run is offered by the creel census carried out in 1954-55. State Game Protectors conducted the field work during the opening week in April when most of the concentrated fishing takes place. As anyone who has fished Catherine Creek knows, the tremendous numbers of fishermen would make a complete census a difficult and expensive operation. So only a partial coverage was attempted. However, as many fishermen as possible were contacted. The ratio of tagged to untagged fish was reported in the census. This ratio, and the tag returns sent in by fishermen not contacted in the census, were used for estimating total catches and fishermen.

Catherine Creek obviously heads the list as the big producer of rainbows (Figure 2). Trout run largest here, averaging about 4½ pounds. Grout Brook fish are smallest at about 1½ pounds. The lower 1956 catch is probably related to poor fishing conditions. Heavy rains on April 2, 1956, brought on unfavorably high roily waters. Many spawned out fish doubtless returned to the lake on the freshet. Considerable numbers of fish seemed present in the preseason observations and the 500 rainbows tagged were captured with about the same amount of effort as in previous years.





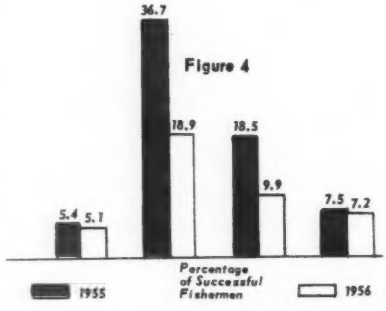


Fig. 2. Example: In 1955, 1000 rainbows were taken first week from Catharine Creek

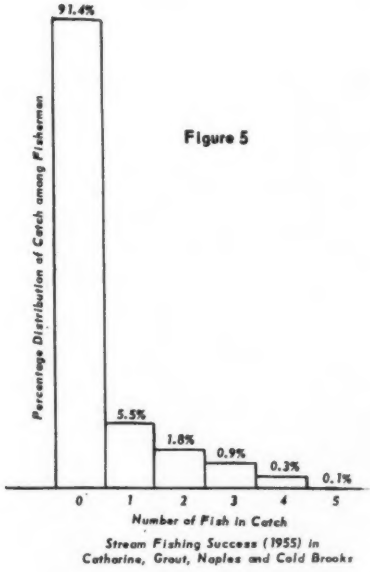
Fig. 3. Example: 485 fishermen per mile of stream on Catharine Creek; 1st day, 1955

Fig. 4 Example: 36.7% Grout Brook fishermen caught trout the first week, 1955

The catch of 1,000 rainbows at Catherine Creek in 1955 is an estimated harvest of some 2¼ tons from the spawning run. This represents a lot of heaving and hauling, just how much can be appreciated from the estimated fishing pressure.

For the 1955 opening date, the estimated "population" of anglers lining Catherine Creek was about 5,000. The relative fishing pressure, expressed as the number of fishermen per mile (Figure 3) ranges from a high of 485 for Catherine to a low of 60 per mile for Grout Brook. It helps to be socially inclined when you fish at Catherine.

This may have advantages conversation-



A few caught trout in streams checked; 91.4% had fun but no fish

wise, but it apparently detracts from fishing success (Figure 4). Note the lowest percentage of successful fishermen is at Catherine Creek: About 5 per cent or one fisherman in twenty has had a chance of proving the value of his excursion to the little woman. But stakes are high, with five pounders common, and enough "big ones" of ten to fifteen pounds to compensate for unproductive hours. The highest proportion of successful fishermen is at Grout Brook, that has also the lowest concentration of anglers and a good run of small fish. But don't stampede here come next season. It's a small brook and doesn't lend itself to communal fishing as readily as larger Catherine.

The first article in this rainbow trout series indicated that the construction of proper stream improvement structures could greatly increase the spawning area in Catherine Creek and Cold Brook.

(Continued on page 34)

Iron Horses in the Adirondacks—Part II

How They're Held in Check

Damage done by railroad fires

IN a previous issue of THE CONSERVATIONIST we briefly recounted the story of the early railroads in the Adirondacks. These iron horses that invaded that vast land of lakes and woods did not get there without overcoming many obstacles, both natural and manmade. Nor has their grip on the North Woods been maintained with ease. Just as one needed to check the exuberance of the flesh and blood variety, so has the iron horse had to be held in check, by regulation, for the safety of all concerned and particularly for the safety of our greatest of New York's playgrounds.

Particularly here do we want to speak of the iron horse and fire protection in the Forest Preserve. There is in the Conservation Law, as it pertains to Lands and Forests, a section to secure proper protection of the forests from fire from the railroads which operate through such territory. This requires the railroads to observe several restrictions, acting, as it were, as check reins on the iron steeds.

One of the rules provides that railroads furnish fire patrolmen unless these patrolmen are otherwise relieved by the Department. They have been at times. But there's the understanding that these patrolmen shall be on call at any time.

Another regulation calls for rights-of-way to be kept cleared of all inflammable material whenever this is required by the Department.

Still another regulation requires the equipping of locomotives with fire protective devices approved by the Department.

Additional rules ask for reports on fires which originate on the rights-of-way or within 200 feet of them, examination of engines and equipment records.

There are restrictions on depositing fire, live coals or hot ashes upon the track or right-of-way on or near forest land unless such deposits are properly protected.

The Department for the past 35 to 40 years has had locomotive inspectors on its payrolls. Once there were six of these inspectors who handled the check reins of regulations and saw to their enforcement. Today there are but two—a senior inspector and an assistant. The reason for the decrease in the number of inspectors has been the most important "bit" of regulation inserted in the mouth of the iron horses—the socalled oil burning order—a mighty restraining curb that has worked for the good of all concerned.

After petition by the Forest, Fish and Game Commission, precursor of this Department, in 1908, following serious forest fires of several years, the Public Service Commission ruled that oil burning operation was mandatory after April 15, 1910 on those lines running through the woods. This date was extended to August of that year, the records show, but give no reason, although one can surmise that the railroads would have sought all the time they could for the change-over.

It was shown at the hearing on the petition that 40 per cent of the fires in 1908 in the Adirondacks had been caused by the railroads. Despite the record of fire loss, the order was not easily obtained. Some six months were spent in hearing testimony. The roads bitterly opposed the proposal on the grounds of expense in making their equipment conform. But to no avail as the oil burning order was sought as a part of a new program of this Department for fire prevention in the Forest Preserve. That it was a regulation that had a tremendously beneficial effect in reducing the number of fires in the Adirondacks goes without emphasis.

During 1956, railroads were charged with only one and six-tenths per cent of the total number of fires in the State. Railroad fires accounted for less than 1 per cent of the area burned. It is believed that these low losses were largely the result of a favorable fire season. While there is little doubt that the increased use of diesel locomotives has played an important part in the reduction of fires caused by railroads, studies and investigations conducted in recent years by the U. S. Forest Service and many of the states have shown that there are many ways in which diesel locomotives can and do cause fires. Recently, the State of Califronia enacted legislation prohibiting the operation of all types of diesel locomotives or tractors through forest lands unless they are equipped with proper fire preventive devices. However, inspections have disclosed that not all fires caused by diesels are from hot carbon emitted from the stack. Frequently, it has been found that brakes have caused the trouble. Wheel bearings often leak oil on the brake shoes, causing carbon to form which, upon long, hard application of the brakes, becomes heated and falls off, igniting inflammable material along the right-of-way. The apparent solution to this problem is the removal of inflammable material for a safe distance from the tracks.

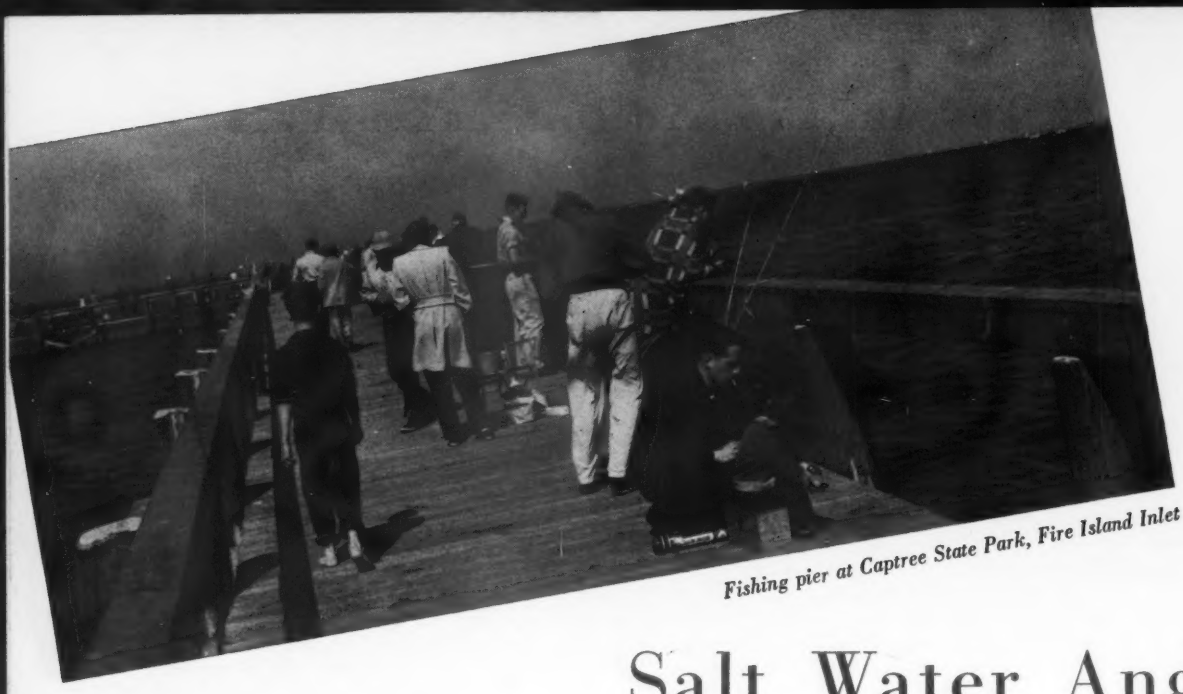
While permission has been granted to suspend the regular patrols following trains in many cases where only diesel locomotives are operated, it has been only on condition that the right-of-way be kept cleared of all inflammable material and that men and equipment be kept available to resume patrols immediately if deemed necessary by the Conservation Department.

All of the character of the iron horse has not been black; it's proved more than a friend to the sportsmen over the years. Not only has it played its role in furnishing transportation to and from the station nearest to the hunting lodge or camp but the iron horse hauled the sportsmen's game back to the city. For the 1901 season, for instance, express agent reports to the Department show the Mohawk and Malone, the New York and Ottawa, the Little Falls and Dolgeville, the New York Central and Hudson River, the Fonda, Johnstown and Gloversville, the Rutland, the Rome, Watertown and Ogdensburg, the Utica and Black River, and the Delaware and Hudson railroads conveyed 1,062 deer carcasses, 103 saddles and 121 heads.

Then too, sportsmen found another use for the iron horse in the '30's. Ski trains to North Creek and Lake Placid took the devotees of this sport from the metropolitan areas into the heart of the Adirondacks and brought unexpected business to its people and the railroads. True, it proved slight as the motor car increased in usage, but it was welcome while it lasted.

Despite the bigger and better highways, motor cars and busses—all stern competitors and checkmates—the iron horse still has his place in the scheme of things in the North Country.

—ROLAND B. MILLER



Fishing pier at Captree State Park, Fire Island Inlet

Salt Water Angling

TODAY, with most segments of the national economy booming, we find the commercial fishing industry very much in the doldrums. There has been considerable agitation for all kinds of assistance, and, in at least one instance, the impact of this unrest will have far reaching consequences on other aspects of natural resources management. There may be disagreement over the causes, but most people will agree that commercial fishing in the United States is not in good shape. This has led to a considerable expansion of both state and Federal research on species of commercial importance. In spite of this, the total being spent on marine research, management and administration not only is far less than that being spent on waterfowl in this country, but also is completely inadequate when the magnitude of the resource is considered.

With commercial fishing declining, at least in earning power, we find marine sport angling increasing at an unbelievable rate, both in the number of participants and in the size of the catch. For certain species the anglers' take is an important factor in reducing commercial earnings, either by lowering the price or by directly competing for the fish. In spite of their great stake in these marine resources, the sport anglers are contributing relatively little toward current or future research, management or administration. It would seem that here is a source for at least some of the funds which currently are so desparately needed.

Proponents of a salt water angling license paint a glowing picture of the results that such funds would assure. I very much fear that most of their claims are erroneous. The ocean is too vast, and its ecology is too complex for the initial impact of a few million dollars to have much effect on the angler or the commercial fisherman. The funds from an angling license would, however, permit more adequate law enforcement, bottom fishing grounds could be built in certain areas, pollution abatement could be accelerated, and practices could be initiated which might benefit certain local fish populations. The real values, however, would come from stepped up research—some on short range problems which might have immediate application—but more especially research on basic problems of productivity, ecology, population dynamics and a host of other subjects too numerous to mention, and many that are presently undreamed of. Don't misunderstand me. Marine biologists today know far more than the public or state and Federal legislatures will accept and, for that matter, far more than most fresh water biologists realize. The unanswered questions, however, still outnumber the answered ones; many, even, are as yet unasked.

At this point I should like to digress for a moment to touch on the conflict between sport and commercial interests. This controversy has often triggered talk of a salt water license. Some anglers have felt that should the sporting fraternity pay its own way, it could call the shots and dominate marine management. Such should not be; any area of conflict must be judged on the overall facts involved. We should remember also that fish is an extremely valuable item of food. In New Jersey we found that the total anglers' catch of certain species, such as fluke, porgies, sea bass and bluefish, approached or even exceeded the total commercial catch of the same species. Rarely do anglers' catches receive proper refrigeration or care in handling; often a considerable portion is wasted, especially when individual catches are large. It may well be that we should either limit the anglers' take and permit the more efficient commercial operators to harvest the surplus, or require angling craft to carry adequate facilities and to market all fish over so many per man.

Now, I think that most of us can agree that we should attempt, scientifically and impartially, to utilize our marine resources, weighing economic, biologic and social factors. I believe also that we can agree that salt water anglers, in their own interest, should make a substantial contribution to marine management with no promises and no strings attached.

There are several courses of action. Individual states can move independently; coastal states can join together in a reciprocal arrangement; or the Federal government can adopt a coastwide fund raising scheme.

One approach is a conservation tax on party boats, charter boats, U-Drives, rowboats and private craft that fish. I believe Florida is using a system of this kind. Another is an extension to salt water of the requirement for a state fishing license

Charter boats at a south shore port, Long Island

Huntington Harbor. Most of these boats fish Long Island Sound

Fishing for fluke Moriches Bay, L. I.

License?

by A. H. Underhill, *Director, New Jersey, Division of Fish and Game*

as has been done in California and Louisiana. Finally, a separate salt water angling license can be established.

Marine species recognize no political boundaries. Most individuals move through the waters of many states and even nations in the course of their lives. Here on the Atlantic Coast, independent action by one state or several states would appear futile or at least altruistic. In the past, most opposition to a salt water license has had its foundation in the recognized ineffectiveness and obvious unfairness of such a piecemeal approach. Aside from the usual cries of "you can't stock the ocean" or "how will it put more fish in my bag," you have the more valid opposition of coastal chambers of commerce, resort owners, etc., who point out that many families would favor vacation spots in states which require no license.

Complete Federal control would appear equally undesirable. Many problems are local in nature, and most states are too jealous of their rights to permit Federal management of coastal angling. At the present time, with commercial fishing almost completely divorced from sport angling in the Federal service, it would appear ridiculous to add to the confusion of a jurisdictional dispute by earmarking funds for the use of a bureau now almost completely "landlocked" in scope and outlook.

There does appear to be considerable merit, however, in a Federal salt water fishing license for the Atlantic Coast states with the funds reapportioned to the various states on a basis of licenses sold in each. A modification of this proposal would be a Federal law similar to workman's compensation whereby fishermen would be required to obtain a Federal license unless they have a salt water license from one of the coastal states. This would have the obvious effect of forcing reluctant states to conform to a coastal pattern.

The third alternative is for coastal states to agree upon coastwide action. All will require a license and all will recognize the license of any other coastal state.

During the transition period, before all states have enacted legislation, each state would agree to honor the salt water license of any state that reciprocated, but would require anyone fishing in its waters to have a salt water license from one of the co-operating coastal states. I think it is obvious that regardless of the method adopted, a fisherman should be required to purchase only one license to fish anywhere on the whole coast. This would tend to make the California system of requiring one license for either fresh or salt water impractical on the Atlantic Coast. California controls most of the U. S. Pacific Coast, but here, the same fish may pass through the waters of 15 states during its lifetime. In addition, many eastern states have different departments administering salt and fresh water fisheries. Fair division of revenue would be virtually impossible. Probably the best medium for the reciprocal action approach is the Atlantic States Marine Fisheries Commission. Here the machinery already exists for joint action and co-ordination.

The vessel tax is, of course, passed on to those who use the boats; it has certain obvious advantages. For most states, however, it would not yield as much as even a very low individual license fee, unless the charge per boat was exorbitant.

I have been unable to determine the constitutionality of either of the Federal proposals mentioned. If they are legally possible, they offer the easiest and most practical approach. No state would be tempted to refrain from requiring a license in order to encourage tourists and out-of-state fishermen. The reciprocal approach would appear to be the only other feasible solution. It will not be easy; some states will vigorously resist any license and so thwart coastwide action Probably it would be better to proceed when a certain percentage of the coastal states have acted.

I have assumed that we are all agreed that increased funds are needed for marine management. If that premise is sound, there is one other alternative to a salt water license. That is a substantially increased general appropriation. Since fish and game agencies have traditionally paid their own way and since legislatures are unstable in furnishing conservation funds, I have discarded that approach.

I believe that increased funds are needed and can be wisely spent. I believe that anglers should help finance marine management. I believe that a salt water license is the most practical solution. But it is our responsibility, as professionals in this field, to present to the public a workable plan of action.

Man, Marshes and—Ducks

MAN is the common denominator, for good or evil, when we think of marshes, of marshes and ducks or simply of water on the land. The evils wrought by man in the mismanagement of water are staggering; depressing. Yet, to limit our thinking to the abuses of this resource is not particularly constructive. What's needed is positive thought and action.

Can we in New York lay claim to positive action in water management? We think so, but you be the judge.

In 1947 the Department developed its first wildlife marsh on the Losee Farm, Greenville, Greene County. The job consisted of filling two drainage ditches with a hand-held slip scraper pulled by the farm tractor. A crude beginning, to be sure, but one that served as a mighty important demonstration.

Ducks took to the water, water which had been gone from the land for nearly a century. Muskrat houses appeared, swallows dimpled the water in their zooming quest for food, deer and raccoon tracks were mute evidence of the acceptance of our efforts. A new habitat had been created for an almost infinite variety of life. We liked what we saw.

But, more important, our bosses liked it. By 1949, a full-fledged program of marsh development was initiated. Earthen dikes substantial in "character and design" were first put on paper and then to work. Mechanical spillways were tested, rebuilt, perfected. Field construction crews were busy on the land and busier improving their "know-how." Laws were changed to allow construction on private lands. By 1956, 883 marshes averaging about five acres each were a reality. The folks in "48-D" had done a good job.

But putting water on the land was not enough. We needed these marshes as partners in this business of producing wildlife. Some were only partially flooded when they became as popular as Macy's during a dress sale, while others, from the very beginning, repelled ducks as effectively as an active no-man's-land. A third group, which appeared to "have it" initially, lost its charm for the marsh-dwellers within a few years.

Many of these water areas were as alike as two peas to our eyes but not to those of waterfowl and associated wildlife. It was evident that we had to see more than our reflections if we were to answer the question, "What's going on?" We were in this business of wetland farming, but not all the way in. Before we were submerged, we needed to know what we were doing.

After a four-year intensive study of four marshes and general observations on numerous others, all of which had been built under the Federal aid "48-D" program, part of the fog cleared. Initially, we were impressed with the fact that sameness in marshes is as rare as in finger prints. Yet, in spite of the almost limitless variation between sites, certain generalizations were possible. We had some answers to the questions: "On what basis do we select sites for development? What features are needed in water control structures to aid in subsequent management? Why does the productive capacity of many of these shallow-water areas deteriorate with age and what can we do about it?" The first two questions may be disposed of with relative ease as they have been answered in the main in earlier issues of THE CONSERVATIONIST. We need add but little.

"Aged in the wood" may be an essential for certain quality liquids but not necessarily for the water of marshes. The flooding of wooded sites on which the trees die may intensify the problems of the marsh manager. Other things being equal, the transparency of the water covering dead, woody material is less than when herbaceous species are submerged. The brown water of many beaver ponds is a case in point. Plants need light and game species need plants for food.

Yet we would be strictly off base if we were to shun wooded sites completely. The decision of whether or not to flood must rest on the considered judgement of a well-trained observer. He should relate his decision to the expected production of wildlife and to costs for correcting adverse conditions if they become critical.

Every hunter, consciously or otherwise, is concerned with "edge" in relation to the abundance of wildlife. Marshes with well-defined margins that slope rather steeply into deeper water will eventually lose this important characteristic—the vegetated edge. Through the agency of wave action, the finer soil fractions are sorted and carried from the marsh boundary and deposited in deeper water. The end result of this selective sorting is that soils along the margins of the marsh may eventually consist largely of washed sand —a relatively sterile growth medium that will not produce vegetation attractive to waterfowl and some of the fur-bearers.

Marshes with gently sloping boundaries, on the other hand, frequently support an abundance of vegetation each year. Under such conditions waves would be tripped well away from the marsh edge by contact with the bottom, slowed appreciably by friction with the soil and vegetation, and hence, their erosive power would be sharply reduced. The selection of sites for development which have broad, shallow marginal areas is of real significance.

The general success of agricultural practices and hence, the fertility of the drainage area, offers a reasonable basis for predicting the success, in terms of wildlife, of a created marsh. Good agricultural soils are usually kept within favorable acid-alkaline ranges for crop production, and higher fertility levels are maintained. Part of the lime and fertilizers added to crop soils reach the marsh basin through run-off and seepage water. Thus more favorable *balances* between essentials for plant growth should be expected in marshes that receive drainage from good agricultural lands than in those surrounded by degraded soils.

It has been noted, not only in the Northeast, but elsewhere, that marshes which lose a relatively large portion of their water during the growing season through evaporation and that given off by plants (processes similar to distillation in terms of nutrient loss) are more productive of desirable food and cover plants than those which maintain a uniformly high-water level. Thus, the size and topography of the drainage area, as well as the annual rainfall where marshes are developed, are important considerations in the selection of sites.

After a site has been selected for development, water-level regulating structures to be installed should be considered. The drainage of marshes to the extent that soils will be aerated may be the only practical solution for temporarily revitalizing such soils. Therefore, to permit proper lowering of the water level, the drain pipe through the dike should be at least one foot lower than the general marsh floor.

Another consideration in the design of water-control structures is the manner in which the normal flow of excess water is carried from the impoundment. The concentration of certain plant nutrients within the water generally increases with depth. A structure designed to remove surface water, as opposed to subsurface water, would be in keeping with good fertility management.

Farmers are acutely aware of the need for a balanced diet in feeding their livestock just as is the housewife in feeding her family. Less often do we consider "balance" in feeding plants. Yet they "eat" too. But there is a wide difference in the intake of "food" by plants and

animals. Animals have the capacity to accept or reject; not so the plants. They may absorb an element in solution, needed, or not, even to the non-essential gold. Modern searchers for this precious metal may obtain valuable clues by measuring its concentration in plant tissues.

Iron is essential for plant growth, just as is nitrogen, although the amount of iron needed is vastly less. Moreover, under well-defined conditions iron goes into solution as surely as sugar does in coffee.

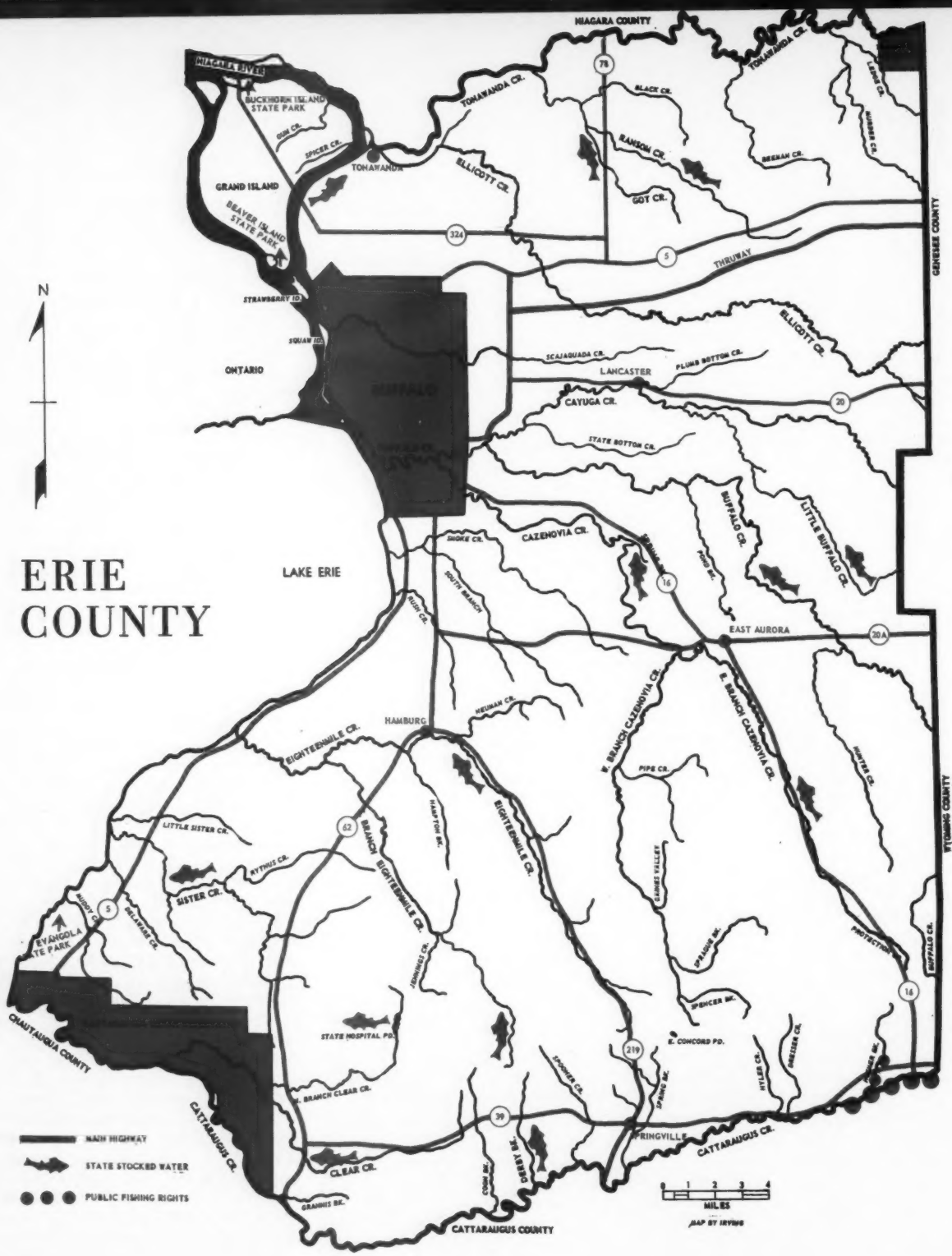
For productive, dry-land agriculture, four pounds of soluble iron per acre may be enough to produce a bumper crop. An aquatic crop such as rice, however, may require about five times this amount. But when we note iron conconcentrations between 8 and 80 fold that needed for rice production, we have literally, too much of a good thing. The element is out of balance. When, for instance, soluble iron concentrations exceed 200 parts per million, or 200 pounds in a million pounds of soil, we can expect trouble; possibly even before this concentration is realized.

Manganese, another metal, may reach toxic concentrations, but as it is far less abundant in marsh soils in this State than is iron, we are, for the present at least, less concerned with it. Most of the detective work that has been done clearly indicts soluble iron as "Marsh Enemy No. 1."

Fortunately, over-concentrations of this element in our marsh society are confronted by a natural "police force." Oxygen, given off by the roots of aquatic plants forms a barrier so that over-doses may be prevented from entering the plant system. To be sure this oxygen bar can be overwhelmed if there is soluble iron to spare after the available oxygen has been tied up. Calcium, the essential ingredient, generally speaking, of lime, can prevent iron from going into solution; sulphur can take it out and organic matter can put our "villain in chains." Our job in management, is to augment this natural police force. Early results suggest our efforts have not been misplaced.

There is no more productive habitat than water, especially properly managed, shallow water. The life it supports is almost limitless as to kind and abundance. Today in New York there are more than 4,400 new acres of shallow water on soils which, a few short years ago were largely wasteland. To be sure, not all these marsh areas are under management. Many don't need it. For those that do, we have advanced our knowledge in the science of wetland farming, and we are, and will continue to put this knowledge to work for constant improvement.

—Arthur Cook,
Game Research Investigator



Conservation Department Offices

District Forester	335 E. Third St., Jamestown
District Game Manager	2130 Scottsville Rd., Scottsville
District Fisheries Manager	2130 Scottsville Rd., Scottsville
District Game Protector	304 State Office Bldg., Buffalo

Farm Service Offices

Erie Co. Soil Cons. Dist.	18 W. Buffalo St., Hamburg
	21 S. Grove St., East Aurora
Erie Co. Agri. Agent	21 S. Grove St., East Aurora

—Roy Irving

New York's 1956 Deer Season

DEER hunters in New York last Fall had their best season ever and hung up a new record with a total take of 72,315 buck and antlerless deer. The 1956 tally represents the third successive year of record-breaking deer seasons in the State, exceeding by a wide margin the 1955 take of 59,532 deer.

Not to be outdone in the record-breaking department the archers posted a new high during 1956, taking 1,107 deer of the total as compared to 939 the previous year.

As expected—with 32 Southern Zone counties or parts thereof open last Fall for a one-day deer-of-either-sex season—the antlerless deer kill contributed most heavily with a total take of 36,723 deer. The 1956 kill of buck deer (35,592) however, ranked with the all-time highs; comparing with 40,082 in 1955 and 36,625 bucks in 1954.

During the 1956 season, as in each of the past several years, Department game research men, game managers and game protectors, checked deer in hunting camps, in transit on cars, at deer checking stations, and in commercial freeze locker plants to secure an adequate sample of the deer taken in each region of the State. These records and the deer take as reported by hunters were tabulated by machine record tabulation methods. It was found that 70.29 per cent of the successful hunters in the Adirondacks reported their deer. Of the Catskill deer taken, 77.72 per cent were reported and 75.77 per cent of the deer taken in central and western New York were reported. These regional corrections were applied to the reported kill by county and region to determine the actual kill on a calculated basis (See accompanying tables).

In the Northern Zone or Adirondacks where last year bucks only were legal game, the season was something of a disappointment. Even so, the total kill (9,575) ranked sixth highest of record and held fairly level with the 1955 take of 10,264 bucks. There were three reasons for the poorer showing. Perhaps most important, the weather was exceptionally warm and dry during the first three weeks of the season. This made hunting difficult for those that made the effort and many were discouraged from making the trip north at all. Secondly, a high percentage of the one and one-half year-old bucks and an unusually high percentage of the two and one-half year-old bucks did not produce legal antlers. This is, of course, a reflection of malnutrition resulting from overbrowsing of the range. Or, briefly, too many deer. Finally, the knowledge that a wide area in the Southern Zone would later be open for a deer-of-either-sex season kept many hunters from making the trip north. The resultant comparatively low take in the Adirondacks removed a very small percentage of bucks from that region.

In the Catskills, however, both the total take (25,282) and the buck take (14,444) are the highest of record for that area of the State. It should be noted, however, that the magnitude of the buck take in the Counties of Columbia, Dutchess, Greene, Orange, Putnam, Rockland, Sullivan and Ulster reflects a deer population in those counties that is rapidly causing deterioration of the Winter browse supply and, in many areas, is seriously damaging young forest trees and agricultural crops.

The take of deer in central and western New York last Fall (37,222) also came close to setting a record and was exceeded only by the 1948 kill of 42,242. It was significantly higher than the 1955 take of 34,948. It is interesting to note that here in central and western New York where periodical antlerless seasons have been held since 1941, the herd has leveled off to produce a high sustained yield. There have been nine such deer-of-either-sex seasons held in various sections of that area since 1941. The total kill in the region in 1941 was 7,894 deer. The total kill this past year, as noted above, was 37,222. It's pretty difficult to interpret antlerless seasons as having an adverse effect on the herd in the light of these records. The deer take in that area has been consistently high in recent years, yet the population has "bounded back" year after year. At the same time, the deer population is, in general, being held at levels compatible with its food supply and with agricultural interests.

—C. W. SEVERINGHAUS, *Game Research Investigator*

ADIRONDACKS

Counties	Reported Take* Bucks	Reported Take* Antlerless	Actual Take** (Calculated) Bucks	Actual Take** (Calculated) Antlerless	Total Take Reported*	Total Take Actual**
Clinton	145	1	206	1	146	207
Essex	656	1	933	1	657	934
Franklin	1,050	3	1,494	4	1,053	1,498
Fulton (northern)	85	--	121	--	85	121
Fulton (southern)	11	--	16	--	11	16
Hamilton	1,181	13	1,680	19	1,194	1,699
Herkimer (northern)	580	4	825	6	584	831
Herkimer (southern)	46	21	66	31	67	97
Jefferson	65	--	93	--	65	93
Lewis	363	1	517	1	364	518
Oneida (northern)	134	2	191	3	136	194
Oneida (southern)	86	90	122	129	176	251
Oswego(northern)	104	1	148	1	105	149
Oswego (southern)	52	14	74	20	66	94
St. Lawrence	1,444	5	2,054	7	1,449	2,061
Saratoga (northern)	100	--	142	--	100	142
Saratoga (southern)	21	--	30	--	21	30
Warren	341	1	485	1	342	486
Washington (northern)	95	1	135	1	96	136
Washington (southern)	163	3	232	4	166	236
County unknown	8	5	11	7	13	18
Adirondack Totals	6,730	166	9,575	236	6,896	9,811

*Includes 14 bucks and 43 antlerless deer taken by archers.
**Includes 20 bucks and 61 antlerless deer taken by archers.

CATSKILLS

Counties	Reported Take* Bucks	Reported Take* Antlerless	Actual Take** (Calculated) Bucks	Actual Take** (Calculated) Antlerless	Total Take Reported*	Total Take Actual**
Albany	330	974	425	1,253	1,304	1,678
Columbia	823	10	1,059	13	833	1,072
Delaware	1,199	3,552	1,543	4,570	4,751	6,113
Dutchess	917	28	1,180	36	945	1,216
Greene	789	15	1,015	19	804	1,034
Orange	883	16	1,136	21	899	1,157
Otsego	669	1,982	861	2,550	2,651	3,411
Putnam	565	17	727	22	582	749
Rensselaer	225	4	289	5	229	294
Rockland	198	9	255	12	207	267
Schenectady	56	--	72	--	56	72
Schoharie	551	1,624	709	2,090	2,175	2,799
Sullivan	2,436	49	3,134	63	2,485	3,197
Ulster	1,501	23	1,931	30	1,524	1,961
Westchester	40	120	51	154	160	205
County unknown	44	--	57	--	44	57
Catskill Totals	11,226	8,423	14,444	10,838	19,649	25,282

*Includes 116 bucks and 339 antlerless deer taken by archers.
**Includes 149 bucks and 436 antlerless deer taken by archers.

CENTRAL AND WESTERN

Counties	Reported Take* Bucks	Reported Take* Antlerless	Actual Take** (Calculated) Bucks	Actual Take** (Calculated) Antlerless	Total Take Reported*	Total Take Actual**
Allegany	963	2,136	1,271	2,819	3,099	4,090
Broome	335	742	442	979	1,077	1,421
Cattaraugus	738	1,644	974	2,170	2,382	3,144
Cayuga	112	256	148	338	368	486
Chautauqua	484	1,080	639	1,425	1,564	2,064
Chemung	282	627	372	828	909	1,200
Chenango	715	1,583	944	2,089	2,298	3,033
Cortland	233	516	308	681	749	989
Erie	167	371	220	490	538	710
Genesee	142	317	187	418	459	605
Livingston	318	704	420	929	1,022	1,349
Madison	302	667	399	880	969	1,279
Monroe	98	217	129	286	315	415
Niagara	44	96	58	127	140	185
Onondaga	114	252	150	333	366	483
Ontario	534	1,182	705	1,560	1,716	2,265
Orleans	120	270	158	356	390	514
Schuyler	305	674	403	890	979	1,293
Seneca	119	264	157	348	383	505
Steuben	1,071	2,378	1,413	3,139	3,449	4,552
Tioga	557	1,234	735	1,629	1,791	2,364
Tompkins	344	764	454	1,008	1,108	1,462
Wayne	92	203	121	268	295	389
Wyoming	238	530	314	699	768	1,013
Yates	327	724	432	956	1,051	1,388
County unknown	15	3	20	4	18	24
Central and Western Totals	8,769	19,434	11,573	25,649	28,203	37,222

*Includes 85 bucks and 249 antlerless deer taken by archers.
**Includes 112 bucks and 329 antlerless deer taken by archers.

State-wide Totals	26,725	28,023	35,592	36,723	54,748	72,315

*Includes 215 bucks and 631 antlerless deer taken by archers.
**Includes 281 bucks and 826 antlerless deer taken by archers.

National Field Archery Tournament

DURING the week of August 11, 1957 more archers will wander New York's wooded hills south of Ithaca, than have been seen there since the days of Indian pow-wows. At this time, archers from all parts of the country will arrive by hundreds to participate in what is expected to be the largest championship tournament in the history of the National Field Archery Association.

Site of the tournament is the New York State Field Archers' championship course, located on the Conservation Department's Connecticut Hill Game Management Area a few miles south of Newfield. Here members of the National Field Archery Association with varying degrees of proficiency in shooting, will compete for honors with archers of similar skill.

Considerable time and effort is being expended in planning for the comfort of visitors and insuring adequate and efficient facilities.

Official headquarters and registration for the archers will be at the Village of Watkins Glen where the Chamber of Commerce* is going all out to make the stay a pleasant one for visitors. Each evening, following the day's shoot, entertainment is planned at Watkins Glen. A parade and championship demonstration is scheduled for the night of Monday, August 12. Since field archery is primarily a participant rather than a spectator sport, the parade, demonstration and some scheduled novelty shoots will afford the public its best opportunity to meet devotees of the longbow.

In other years camping has been permitted at Connecticut Hill during the State championship shoot. This year, due to the large number of archers anticipated for the national event, the Connecticut Hill site would be inadequate. Three other nearby camping areas are available: Watkins Glen State Park, Robert H. Treman State Park and Buttermilk Falls State Park. All have facilities for comfortable camping and are within easy driving distance of the shoot area. Hotels and motels are also available.

Some readers, unfamiliar with field archery may welcome a description of the sport. During the early days of modern archery in this country, a number of archers who preferred wandering woods and fields in search of game, found standard practice targets inadequate for practice purposes or as a test of their skill. An open, mowed archery range was hardly comparable to most hunting situations. The problem was to simulate hunting conditions on a practice course.

*Additional details regarding the shoot may be obtained by writing J. Callanan, Chamber of Commerce, Watkins Glen, N. Y.

AVERELL HARRIMAN
GOVERNOR

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY

March 18, 1957

Dear Mr. Callanan:

All of us in New York are as pleased and honored as the people of Watkins Glen that the Field Archery Association has chosen to hold its national tournament this year in our state, in your village of Watkins Glen, at our State Conservation Department's field archery course on the Connecticut Hill Game Management Area.

To the many coming from out-of-state to attend the tournament as participants or spectators, I say for myself and the people of our Empire State:

Welcome to New York! We are happy to have you with us.

As the archers pull the long bow, I hope their every arrow hits its mark. I know the archery tournament will be a happy and memorable occasion. To all attending, I send warm greetings and best wishes.

Sincerely,

Averell Harriman

Mr. John P. Callanan
Chairman, The National Field
Archery Tournament
303 Franklin Street
Watkins Glen, New York

First step was to move targets into the woods. By cutting small shooting lanes and varying shooting distances, the archers found their skill improving. Designated shooting positions, plus stating the number of arrows to be shot from each, provided field archers with a basis of comparison. Use of varied terrain, the addition of more targets requiring judgment of distance and shooting angle, all added to the present sport.

As the numbers of field archers increased, classification systems were developed to rate each archer's ability on a standardized course with a specific number of shots. Yardage of targets varies from about 15 to over 80, with a smaller target at the closer range and arrows limited to four per target. The unhappy archer of unique ability featured in our illustration, stands before a typical short target; two small target faces on a bale of hay. This material serves for field archery targets on field courses across the nation.

Basic unit number of targets for a field course is fourteen. Many small clubs have only this number. The national shoot at Connecticut Hill will have 224 targets laid out in eight separate courses for the tournament plus 56 targets at Watkins Glen to be used for special events and novelty shoots. Contestants at Connecticut Hill will shoot in groups of four, moving from one target to the next after each of the group has shot and his score tabulated. Each participant shoots the same targets and scores are comparable.

The growth of organized field archery has paralleled an increased interest in bow hunting, each benefitting the other. Correct estimate of unknown yardages and accurate shooting is essential to both sports. Recognizing this, both State and National Field Archery associations give annual awards to their members who have taken large or small game with the bow.

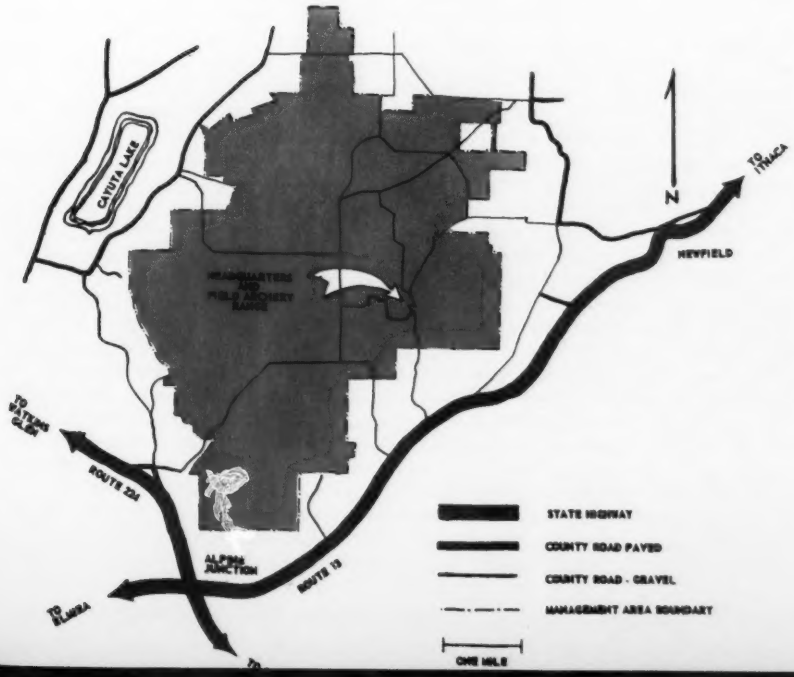
A growing population, seeking recreation within limited natural resources, is finding that field archery and bow hunting have a place in today's conservation picture.

Game Management Areas in the State of New York are administered with the idea of maximum multiple use by all the people. Utilization of Connecticut Hill as a field archery course is compatible with this philosophy. In fact, the National Field Archery Association's tournament will mark the greatest participant use of a Game Management Area within a week's time now on record.

We wish the field archers a successful shoot, and a pleasant sojourn in New York State.

—H. Wayne Trimm

CONNECTICUT HILL GAME MANAGEMENT AREA



A Key to the Future

by Irving B. Stafford, State Conservationist,

Soil Conservation Service, U. S. Department of Agriculture

ASK Bill Foss, Director of the Conservation Department's Division of Lands and Forests, how many acres of forest there are in New York State and he'll tell you right off the cuff. Ask Bill Senning "ditto" for the Division of Fish and Game, how many miles of stream on which the State has purchased public fishing rights and you'll get the correct answer just as quickly. But just ask how many acres in the State need to be planted to trees, or how many good marsh sites there are, or how many miles of diversion ditches are needed or what are the total conservation needs! Then the argument will begin. There'll be a dozen different opinions; conflicting answers.

But we need to know, not only how much we have of renewable resources, but how much we have yet to do to conserve and improve those same resources. When I say *we* I mean all of us who deal in any way with soil, water, grass, trees, shrubs, fish or wildlife. Each of us may have in mind a few figures that apply to the particular segment of conservation in which our principal interest lies. Few of us, however, know as much about the other segments as we should. The result is that, individually, we find it easy to overestimate the work we're directly concerned with and underestimate all the rest without any intention of being unfair or uninformed.

That's just human nature, you say. It is, too. But it's not very realistic when we face the tremendous job of protecting and improving all our natural resources for present and future use by all our people. The forester may want trees where the game man wants to plant shrubs or build a marsh. And the farmer who obviously has an important say in the matter, may want to pasture the same area. It's apparent this can't all be done on the same few acres. What, then, shall we do?

An inventory of needs is a logical first step. No well-managed business would dream of operating without an inventory; business men know that otherwise they're lost. And make no mistake, we're in business; though we don't make cars, build houses, fabricate steel or process textiles. We do, however, deal in the protection and improvement of our natural resources —and that's big business! We need that inventory. We need it nationally, state by state and county by county. We need it especially now that the various conservation programs affect such a wide range of private and public interests. The work load for all of us is increasing rapidly.

The U. S. Department of Agriculture, through the Soil Conservation Service, has therefore undertaken a national inventory of soil and water conservation needs. All the other department agencies in any way concerned with conservation are obligated to help. All state and local organizations, agencies and groups are invited to participate. The list for New York is impressive. Just to scan it gives you a good feeling. So many groups have the interests of sound resource use at heart and are all working together. Their aim is not to bedevil the poor little rabbit, or hook the unwary fish, or drain into oblivion the duck resting and nesting sites, or plant all the pastures to trees and shrubs or cut all the woods and bulldoze all the stumps to clear the way for cultivation of corn or beans or potatoes. Of course, they do want to hunt rabbits and ducks and catch fish. They do want trees and shrubs planted and corn and beans cultivated. But they want these in proper balance. They don't want rabbits to the detriment of corn, or trees to the exclusion of ducks, for example. And when they plan for food, cover and range for rabbits they want it to be the best. The species of trees or shrubs should be the best for the sites available. The sites, themselves, should be the best for the purpose, giving due consideration to other needs for those same locations.

We, in New York, have already begun the job. In fact, we have the figures for three counties—Ontario, Lewis and Dutchess. We got an early start because we were one of the five states selected to make trial runs in order to determine approximate costs of collecting these needs figures. We can also get a few of the bugs out of the system before it is put to use in the total national job.

We have organized committees to do the job as you might expect. The State Soil and Water Conservation Needs Committee is the guiding hand. On it are represented the seven agencies of the U. S. Department of Agriculture assigned to the job by the Secretary. They are: Soil Conservation Service, Forest Service, Agricultural Conservation Program Service, Farmers' Home Administration, Extension Service, Agricultural Research Service and Commodity Stabilization Service. On it also are men from the State Conservation Department, both from the Division of Lands and Forests and the Division of Fish and Game. Participating in our preliminary discussions and to be consulted throughout the study are the Fish and Wildlife Service of the U. S. Department of the Interior, Corps of Engineers of the U. S. Department of Defense, U. S. Geological Survey, U. S. Weather Bureau, New York State Farm Bureau Federation, New York State Grange, Izaak Walton League, Conservation Council and New York Soil Conservation Districts Association. The Extension Service representative really speaks for all the interested departments of Cornell. Dean W. I. Myers has appointed a committee to work with him. On that committee are men from the Extension Service, the Experiment Station, and the Departments of Agronomy, Agricultural Economics, Conservation and Agricultural Engineering.

The primary State Committee works through three subcommittees: Steering, Training and Review. Working within the broad framework of the National Committee policies, the Steering Committee takes care of local policies, procedures and interpretations. The Training Committee works with the County Needs Committees, providing them the instructions they need. The Review Committee examines reports as they come from the counties, suggests any needed modifications or improvements and eventually recommends these individual county reports to the State Committee for is final approval.

The County Committees are made up of the counterparts of the men on the State Committee. It's here on the County Committees that the detailed work is done. These men decide what the local needs actually are. This gives assurance that the needs are realistically reported.

Three years have been allotted in which to accomplish this monumental task. Obviously, it is impossible within that short time to examine each piece of land and make the necessary determinations. Therefore, a sampling method has been devised. The Biometrics Laboratory at Cornell studied various ways of sampling, checking the results against a few counties for which the Soil Conservation Service had already prepared completely tabulated physical data. They arrived at the conclusion that a 2 per cent random sample composed of 100-acre plots scientifically located to include land in each land use capability unit in the county would provide the basis for reliable estimates. A detailed soils map is prepared for each plot by the men engaged in the co-operative soil survey. Each plot is further examined to determine the current land

A red pine plantation. This boy has a stake in the future

Contour farming from the air; looks good — is good

Below — no cover on the land; result —erosion and gullies

Right — This small farm pond, Delaware County has multiple values

use—cropland, pasture, woodland and wildlife—the present ownership, public or private land in farms and non-farm and public land devoted to other use. With this information, together with census and other available usable data, they expand the data to include every acre of each land capability unit in the county. This they are at liberty to adjust if their knowledge and judgment dictate.

Having arrived at these physical facts, they use their knowledge of what has been done conservation-wise and their judgment as to what else still should be done, to estimate the amounts of the individual conservation activities needed for the total job. They also estimate the cost of doing it.

Once these county figures are approved as realistic and arrived at with reasonable uniformity, they will be consolidated into state totals and sent to Washington. With a comparable job done by the Washington committee, national figures will be prepared.

With every conservation agency or organization having had the opportunity to participate, and actually participating if experience to date is any criterion, we will have dependable figures. Each group will then be able to use the figures as their own with assurance. All will be in their proper perspective and the possibilities of over or under emphasis greatly reduced, if not entirely eliminated. The united, co-ordinated, co-operative approach to the protection and improvement of all our natural resources will thus be more effective than it has been in the past.

Nature doesn't stand still. Economic conditions change. Trees grow. Farms decrease in number and increase in size. All this means that today's figures may be out of date tomorrow. For this reason, needs figures will be reviewed and brought up to date every ten years. Ten-year revisions won't be as laborious as the present task but it's a job that needs to be done to keep our sights in line.

We are starting this conservation needs survey none too soon. Our population has been increasing at a tremendous rate —much faster than our statisticians have ever calculated. Our economy is expanding so rapidly and in so many new fields that at times it makes your head spin. Every year new tens of thousands turn to fishing, hunting and other outdoor pastimes as a means of relaxing from the strains and stresses of our modern civilization. Not only do we have our own increasing population to feed; we have rising demands, and obligations, to feed the undernourished and the starving people in the distant parts of the world.

All the while, many of our natural resources are dwindling—slipping through our fingers—largely because we've had no adequate inventory to guide us in a more concerted and intelligent effort to conserve them. An alarming amount of our productive soil is still being washed down into our streams, lakes, harbors and oceans. Or blown into the bright blue yonder. Water is wasted in great volumes at the same time that many parts of our nation are suffering tragically from drought. Recreational areas are getting more and more crowded.

As our future need of agricultural land and recreational areas expands, the land available shrinks. Industrial expansion, real estate developments, super shopping centers, highways and parkways, military establishments and airports are consuming large areas of our best farm land. There is growing talk for zoning all land.

With all this awakening awareness of a grave and growing problem, the time could not be more opportune or propitious for the taking of a national inventory of soil and water conservation needs. It may hold the key to our future.

NEW YORK STATE'S WEATHER

SIROCCOS are hot dry winds that blow northward from the Sahara Desert into Nothern Africa. Boras are cold dry winds, often violent, that roll down the mountain slopes of the Adriatic. Somewhere between these two extremes are winds that blow across the Empire State, and account for her climate. Sportsmen are ever conscious of the winds, and Isaac Walton found time to write with reason and rhyme:

"When the wind is in the north,
The skillful fisher goes not forth;
When the wind is in the east
'Tis good for neither man nor beast;
When the wind is in the south,
It blows the flies in fish's mouth;
When the wind is in the west,
There it is the very best . . ."

New York State is highly favored in its climate as it affects the sportsman. Winters are cold enough to provide ice fishing, Spring early enough for trout fishing, Summers moderate enough for favorable fishing conditions through most of the vacation months except during the hottest of periods, and Fall comes early enough to facilitate good hunting. Early Winter snows blanket most of the big game country, to help nimrods stalk their prey.

Residents in the Empire State are usually familiar with the variability of the weather from one place to another, but how many are there who know that Troy (New York) has reported temperatures at least one degree higher than San Antonio, Texas, 10 degrees higher than Miami, Florida, and 20 degrees higher than Honolulu? Who would guess that Stillwater Reservoir in northern Herkimer County would have recorded temperatures seven degrees lower than a cold spot like Bismarck, North Dakota, and two degrees lower than Glasgow, Montana? How many people from New York know that areas east of Lake Ontario receive just about the greatest amount of snow east of the Rockies, except for some few mountain tops?

What accounts for this almost unbelievable variability of the weather across New York State? Four considerations come to mind: Differences in latitude, character of topography, large bodies of water, and finally, the overall wind circulation.

Latitude

Other things being equal, the distance north or south of the equator determines the temperature of a locality since the average yearly temperature decreases about one degree (Fahrenheit) for each degree of latitude in the north or south direction from the equator.

Topography

Mountains and valleys have a profound effect on New York weather. Air that ascends a mountain cools at the rate of one degree (Fahrenheit) for each 300 feet of rise, and warms at the same rate as it descends the opposite side. The cooling process tends to bring about a saturated condition which results in precipitation. The warming, on the other hand, tends to dissipate cloudiness and precipitation. Valleys tend to trap cold air, and often result in colder nighttime weather in some of the normally warmer southeast sections of the State than in some of the colder northern mountain sections.

Large Water Bodies

The waters of Lakes Erie and Ontario have a tremendous effect on areas adjacent to them. These lakes tend to take the "edge" off the Winter cold, and the "burn" off the Summer heat. The fruit growing industry takes advantage of this buffer effect and has located near the lakes. To escape the hot blasts, Summer tourists find the cooling on-shore breezes much to their liking. But when Summer passes and the cold winds from Canada begin to cross the lakes, a new weather development starts to take shape along the eastern shores. Cold dry winds suddenly pick up warmth and moisture as they cross the lakes, and this sets the stage for Winter snows that bring skiiers from far and wide. Some areas in the western slopes of the Adirondacks average 170 inches or more of snow a year, and a number of communities report falls in excess of 200 inches. Some of the outstanding snow areas east of Lake Ontario with their highest yearly harvest of snow are: Adams Center (Jefferson County), 334 inches; North Lake (central Herkimer County), 321 inches; Hoffmeister (southwestern Hamilton County), 264 inches; Bennetts Bridge (northern Oswego County), 311 inches; Raquette Lake (Hamilton), 264 inches; and Highmarket (Lewis County), 210 inches.

Overall Wind Circulation

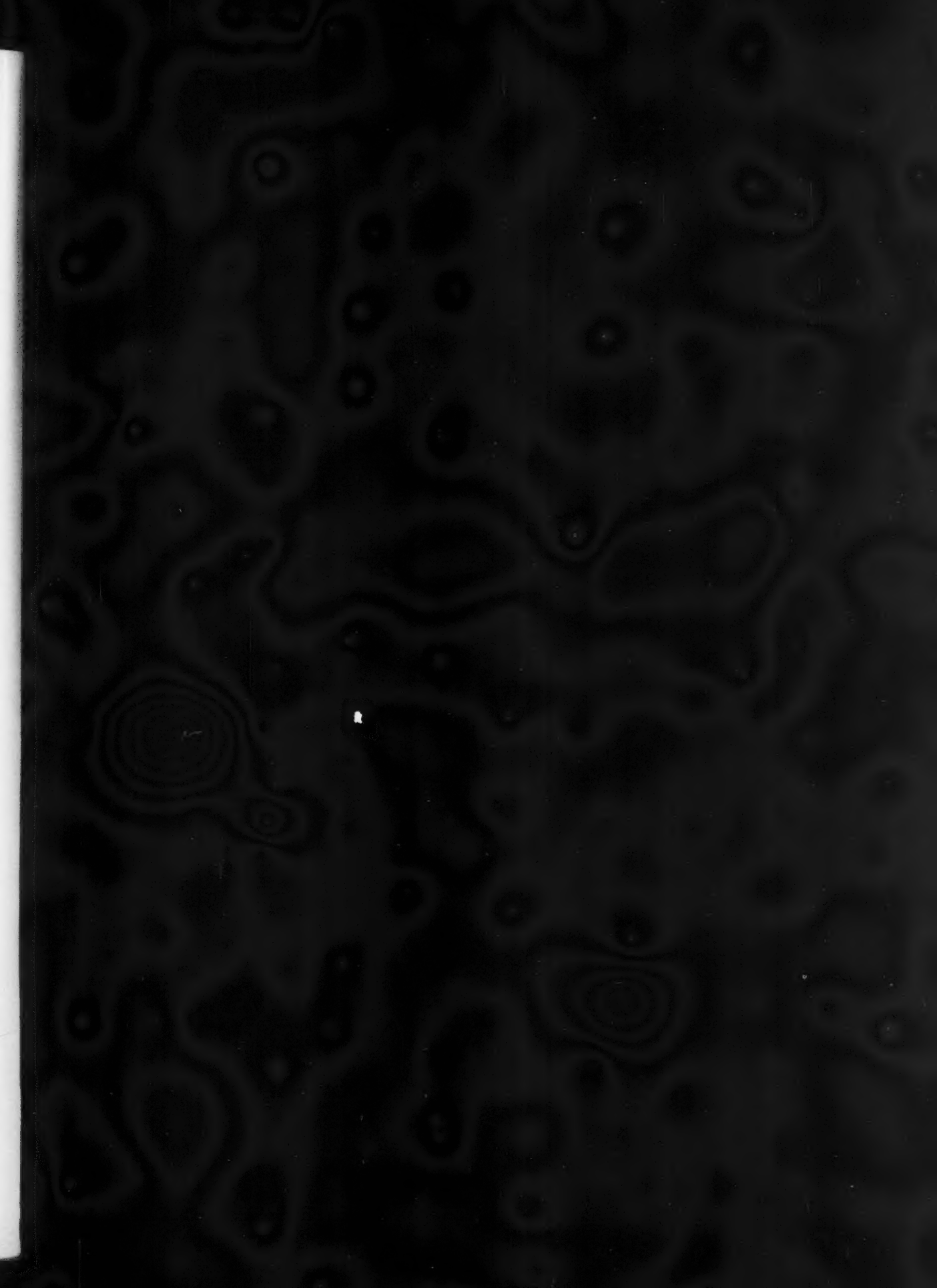
In our planetary atmospheric circulation nearly all weather disturbances which pass easterly from the Great Lakes or Upper Mississippi Valley either cross the State or their centers approach sufficiently close to affect its weather. These storms are not usually heavy precipitation makers because only limited amounts of moisture are available to them. Storms moving up the Atlantic Coast usually skirt the southeastern corner of the State, and often affect large portions of the State. This type of storm is very important during Winter months when there is an extreme temperature contrast between colder weather covering the Empire State and the Northeast, and the warm humid air drawn northward into the vortex of the storm from the South Atlantic coastal sections. Heavy snows, sleet or ice storms often result from these developments.

These storms or low pressure systems are usually followed by large masses of air in the form of high pressure systems. The "highs" normally bring periods of fair weather; in the Summer they bring the refreshingly cool air that follows the Summer heat; in Winter the bone-chilling cold that often numbs the State. Some of these air masses come in from the Pacific Ocean and are warmed to moderate levels by the time they reach New York. Others come out of Western Canada and bring seasonably cold weather. Others come out of Central or Eastern Canada and these are the coldest of them all. The coldest weather develops when these Eastern or Central Canadian air masses stagnate over New York State. They bring clear skies, with little or no wind, and with a snow cover under foot, many subzero temperatures are usually the end result. Stillwater Reservoir reported 52 degrees below zero under similar conditions back on February 9, 1934.

During Summer months, large air masses, not originally warm in themselves, finally account for some of the worst heat waves. These mounds of high pressure may start off as cool breaths of air when they arrive in the East, but as they stagnate for several days over the Mid- or Lower Atlantic States, the weather scene changes. The circulation then tends to bring hot dry air out of Mexico, across Western Texas, and northeastward through the Ohio Valley into New York State. This happened back in July, 1926, and on the 22nd of that month, Troy registered 108 degrees, which is still the all-time State record. Fortunately, these heat waves are usually brief and infrequent. A page from the Bible (St. Luke, Chapter 12, Verses 54, 55) perhaps has the last word and we quote:

"And he said also to the people, when ye see a cloud rise out of the west, straightway ye say, there cometh a shower, and so it is.
And when ye see a south wind blow, ye say, there will be heat and it cometh to pass."

—THE ALBANY WEATHER BUREAU



CLOUDS and WEATHER

Cumulus (low)

Barometer unsteady, wind from W or SW
Light to heavy precipitation

Cirrocumulus (high)

Barometer rising, movement from W or NW
Clearing and cold

Barometer falling, movement from SW
Increasing cloudiness and precipitation

Cirrostratus with halo (high)

Barometer falling, movement usually from SW
Precipitation within 24 hours

Stratocumulus (middle)

Barometer unsteady or falling
Often followed by precipitation

Barometer steady or rising
Clearing and fair

Cirrus (high)

Barometer falling, movement from SW
Increasing cloudiness and precipitation

Barometer rising, movement from NW
Clear and cold

Nimbostratus (low or middle)

Barometer falling, movement from NE, SW, or S
Increasing cloudiness and precipitation

Barometer falling, movement from SW
Increasing cloudiness and precipitation
Movement from NW Clearing

This chart of cloud types and weather conditions was prepared with the cooperation of Vincent J. Schaefer, well known meteorologist, photographer, and author. By combining the barometric trend, cloud type, and direction of cloud movement, some success may be had in short range weather forecasting.

Altocumulus (middle)

There was a time, it's said, when meteorologists predicted the weather on what they could see by looking out the window. If so, that day is gone. Meteorology today is a highly complex science. In this scheme, clouds are symptomatic of the weather—past, present and future.

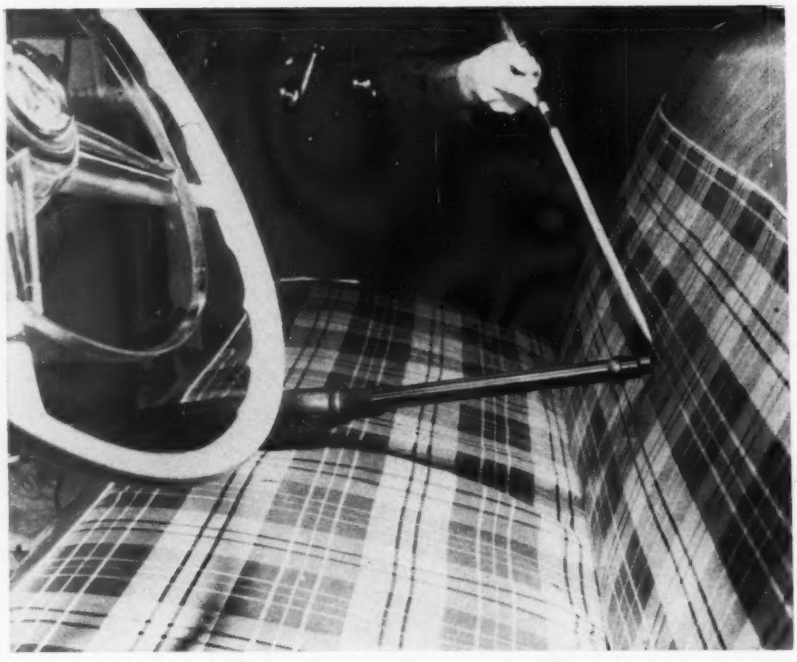
Hunting Accidents—1956

NEW Yorkers had cause to rejoice last year—it was a season of new records including an all-time high for deer hunters; a miraculous "low" for forest fires. But we set another record, too; this one depressing to report—a six-year high in the number of hunting accidents.

As will be noted in the accompanying charts there were 143 hunting accidents during the calendar year 1956; 11 of them fatal. License sales, however, climbed over the million mark last year for the first time and with more hunters afield than ever before there was, of course, just that many more accident opportunities. The key figure, however, is the ratio of accidents to licenses issued; one accident last year for every 7,209 licensed hunters afield; a higher ratio than in any year since 1951.

We regret, too, despite efforts made to contact all license issuing agents to halt the unlawful licensing of untrained and uncertified minors, that this practice continues. This is apparent from the records —about the same number of untrained minors involved in hunting accidents last year as in previous seasons. It appears essential that we redouble our efforts to halt this disregard for the law and the tragic consequences which too frequently follow.

On a brighter side, we again wish to express our gratitude to the hundreds of certified N.R.A. instructors who continued their life-saving efforts in the hunter training program; instructing a record breaking 28,457 minors in how to handle firearms safely *and* how to conduct themselves like sportsmen in the field. Actually, this training record is more impressive than it appears. A number of instructors had not reported the numbers of minors trained to N.R.A. when this tabulation was made. It's estimated that these late reports will bring the trainee total to approximately 35,000 for the year.



A loaded rifle on the front seat—a sudden stop —a friend in back died; the bullet in his head

ACCIDENTS re GAME PURSUED	1954	1955	1956
Big Game	22	37	21
Small Game	40	42	84
Others and unknown	58	51	38
Total	120	130	143
CAUSES OF ACCIDENTS	**1954**	**1955**	**1956**
In line of fire	48	43	58
Carelessness	24	23	25
Richocheting	14	20	19
Mistaken for game	15	13	6
Loading or unloading gun	1	6	7
Others and unknown	18	25	28
Total	120	130	143
MANNER OF ACCIDENTS	**1954**	**1955**	**1956**
Self Inflicted	23	37	39
Shot by companion	78	78	93
Unknown	19	15	11
Total	120	130	143

HUNTING ACCIDENTS Year	Fatal	Non-fatal	Total	Licenses sold	Accident-To-License Ratio
1951	17	124	141	835,062	1 : 5922
1952	14	106	120	883,580	1 : 7363
1953	7	105	112	903,646	1 : 8068
1954	10	110	120	938,716	1 : 7823
1955	12	118	130	972,399	1 : 7480
1956	11	132	143	1,016,557	1 : 7209

Year	Minors Reported Trained	INVOLVED IN ACCIDENTS Trained Minors	Untrained Minors	Adults	Total
1953	21,427	11	21	80	112
1954	24,195	23	23	85	120
1955	20,175	24	24	82	130
1956	28,457	24	23	96	143

Another Spring—Another Generation

by Verne Rockcastle, *Cornell University*

WHEN the Canada geese and the ducks return to their northern nesting sites, and woodchucks, chipmunks and bats reappear on the New York scene, some persons will say: "How good to see the wild creatures back again." But all have not returned. Far from it! Predators (including you and me), dwindling food supplies, accidents, disease, and the rigors of Winter all have reduced their numbers during the past year. Few animals become extinct in the face of these ravages, however, because every Spring one of the most thrilling processes in Nature takes place—a renewal of wildlife. This replenishment of wild creatures is an assurance backed by eons of repetition that each race will survive.

The modes or patterns of replenishment are as varied, perhaps, as the appearance of the animals themselves. The size of the litter, or brood, depends in part upon the extent of parental care and the individual chance of survival. The habits of some may seem strange, inadequate, or unnecessary but it is by these means that the creatures have prospered. Other means might not have sufficed. Each mode of replenishment represents a long and continuous evolution. The reproductive habits of the opossum, for example, are backed by more than 50 million generations! A study of the replenishment patterns of some of our native warm-blooded creatures will show the reason for it all: To insure that enough survive to perpetuate the race.

Perhaps the earliest preparations for Spring replenishment are those of the bears, the bats, and some weasels. The black bear may mate as early as June. For such a large animal the cubs born in mid-Winter are astonishingly small—no larger than a rat. Given nourishment and protection by a sleepy mother they grow rapidly and by Spring are ready to romp. Their predators are few and except for man their small litters would undoubtedly serve to maintain a sizeable population, particularly around dumps and garbage pits—the omnivore's smorgasbord.

Many bats are believed to mate in late Summer or early Fall, but the females store the sperm until it is ready for use in Spring. The single young (except for twins or triplets in the red and hoary bats) are born in early Summer. Squeaking audibly and nearly naked, the brown bats begin a mostly upside-down life, clinging by thumbs and feet to whatever support their dark shelter offers. The tree bats often carry their tiny young about until they, too, are able to cling to their arboreal supports. Aided by their mother's wings young bats nurse for two or three weeks before flitting about in search of solid food. Bats' chief peril is bad weather, since several days of wind or rain without food may mean starvation to these winged appetites.

Some weasels mate in Summer as do the bears, but unlike bats, weasels do not store the sperm. Fertilization occurs almost immediately. The development of the embryo is believed to be delayed, however, so that birth takes place in early Spring. The young weasels, helpless and blind for over a month, nurse for several weeks. After weaning, when the young weasels are well-furred, their teeth are sturdy and ready to be tried on the many small, warm-blooded creatures that constitute their prey. From then on the young weasels are committed to a life of predation, but at the same time may themselves fall prey to hawks, owls, or even an occasional housecat.

For skunks, close relatives of the weasel, mating begins as Winter wanes. The young are born in Spring. Like the weasels, they are blind, helpless and naked at birth. They are nursed for a month and a half or more before they turn to insects, meadow mice, berries, and whatever pilferage the parents can bring to them. By Summer the young participate in the nightly forays. It is a comical sight to see a chain of young following their mother about in a sort of follow-the-leader of stripes and smells.

By late Autumn the white-tail buck asserts his influence among the chosen does. By June, one or two wobbly-legged fawns are born. They are masters at concealment, and lie in the shelter of a thicket for days until they are strong enough to travel. Their brown, spotted coat is difficult to detect at even a few feet, and it is said that they give almost no scent to passing predators.

Weasels, bats, bears, and deer—all make early preparations for the Spring replenishment. The opossum, however, is as tardy as the others are early. It mates only 13 days before the young are born. These 12 to 18 bee-sized young bear little resemblance to their parents. Blind, naked, and nearly helpless, only their forelegs show much development. With these tiny clawed appendages they haul themselves through a veritable forest of fur to the pouch, where a dozen or so food lines await the early arrivals. The latecomers inevitably perish. For those inside the pouch warmth and nourishment are assured. In two months the inquisitive youngsters may peek from the pouch, or even clamber about their mother for increasingly long periods of time. In another two months they have adjusted to life outside the pouch, and with it the young opossums assume all the hazards of juvenile independence.

Most mammals maintain themselves with only one litter per year. Some, such as the gray and red squirrels, produce a second litter in late Summer. A few, such as the meadow mouse, go right through the Summer with one litter after another. So defenseless, yet so often preyed upon, their only solution for survival is a re-production line:

"The vole is prey for hawks and foxes
And owls that nightly flit from copses;
Solution (lest extinction follow):
Produce more voles than they can swallow! —V. N. R."

Its replenishment is hardly confined to Spring. Rather, the blind and naked young may be born almost any time from Spring to Fall. They grow rapidly, and in eight or ten weeks are themselves capable of reproduction.

Thus, animals faced with many perils, and with little individual chance for survival, have many offspring. Replenishment for them is necessarily frequent. Animals with few enemies, or whose young are provided exceptional care, need few replacements. Mice need many; deer and bear need only one or two. Nature seems to have given all wildlife a choice: Gamble with many, or insure a few.

Just as mammalian replenishment is largely a process of Spring, so it is in birds. They, more than mammals, confine their mating, nesting, and brooding activities to the first warm days of Spring or early Summer. A typical Spring nester is the chipping sparrow, or chippy

(*Continued on page 34*)

WHITE-TAILED DEER
OPOSSUM
RED BATS
SPRING
COYOTE
RED FOX
SKUNK
SHORT-TAILED WEASEL
COTTONTAIL RABBI
CHIPPING SPARROW

RING-NECK PHEASANT
RUFFED GROUSE
GRAY SQUIRREL
HOODED MERGANSER
MALLARD DUCK
GREAT BLUE HERON
G BABIES
GREAT HORNED OWLS
BLACK BEAR
WHITE FOOTED MOUSE
Wayne Trimm

New Trout for None

Splake from a reclaimed Adirondack pond

THE first objective of this program is to kill fish! Now, before you conclude that the Department's fisheries biologists have gone off the deep end and are practicing conservation in reverse, we hasten to add: (1) That the fish killed, (stunted panfish, gamefish and a variety of coarse fish), are of little or no interest to anglers, and (2) the waters wherein this murderous design is followed, are thereafter stocked with trout.

If you would know how these Adirondack waters fell to such poor health as to require this drastic treatment; how the ailment is diagnosed; how the "patients" are prepared for treatment and the "medicine" administered, we refer you to the case record in THE CONSERVATIONIST for April-May, 1951, June-July, 1952, and April-May, 1954. Our purpose here is simply to report that these "patients" are doing fine and to give you their names and addresses (see accompanying chart) so that you can go see for yourselves. And bring your fishing tackle—BUT NO BAIT MINNOWS!

As of December 31, 1956 a total of 74 ponds have been reclaimed. Waters treated in 1956 (see accompanying chart) are expected to be stocked with legal fish soon after the ice goes out in the Spring of 1957; and will provide angling only for these stocked trout during 1957. With very few exceptions, most of the other waters are expected to provide good trout fishing. Due to their remoteness, many reclaimed ponds are stocked annually by Department airplane. Those waters on or near roads are, of course, stocked annually by tank truck.

Brook trout continues to be the principal species of fish stocked in reclaimed waters. In two ponds a combination of brook trout-rainbow trout has been stocked for several years. In one of these waters, the growth of rainbow trout has approximately doubled that of brook trout. Fishing has been afforded for rainbows in the three- to four-pound class, while the brook trout are struggling along at one to two pounds. In two other waters, splake (brook trout x lake trout) have been tried and are providing satisfactory results. It is planned in 1957 to stock one pond with a combination of splake and rainbow trout. These various combinations are not being attempted with the idea of giving fishermen a short course in fish identification, but rather to see if we can provide a greater return to the angler. We know that brook trout do well in most reclaimed waters. In a few selected ponds, however, it is thought that two species might better utilize the available food supply, than a single species, and thus provide a greater overall harvest.

During the years 1952-1954, the elimination of yellow perch from a chain of connected waters, forming the headwaters of the West Branch St. Regis River, was undertaken. This three-year project was a contribution of Federal Aid in Fish and Wildlife Restoration and involved the treatment of 14 ponds and 21.25 miles

Editor's note: The reclaimed ponds listed are too many, often too small and too widely scattered to show on a single map. Accordingly, the chart refers you the proper U.S.G.S. quadrangle map for the ponds listed. These Quads can be purchased from the U. S. Geological Survey. Washington 25, D. C. at 20¢ each.

Reclaimed Ponds as of 1956

Pond	*County*	*Town*	*Quadrangle*	*Size (Acres)*
Bass	Essex	North Hudson	Paradox Lake	39
Big Cherrypatch	Essex	North Elba	Lake Placid	13
Cold Spring	Essex	North Elba	Lake Placid	8
Connery	Essex	North Elba	Lake Placid	70
Duck	Essex	North Elba	Lake Placid	3
Grizzle Ocean	Essex	Ticonderoga	Paradox Lake	23
Hatch	Essex	North Hudson	Paradox Lake	10
Huntley	Essex	Minerva	Newcomb	39
*Little Rock	Essex	Ticonderoga	Paradox Lake	5
Long	Essex	North Elba	Lake Placid	12
Lost	Essex	Ticonderoga	Paradox Lake	35
Moose Mountain	Essex	North Hudson	Paradox Lake	38
Oliver	Essex	Schroon	Schroon Lake	32
Owen	Essex	North Elba	Lake Placid	18
Oxshoe	Essex	Schroon	Paradox Lake	15
*Rock	Essex	Ticonderoga	Paradox Lake	57
Shingletree	Essex	North Hudson	Elizabethtown	4
Trout	Essex	Moriah	Elizabethtown	7
Black	Franklin	Santa Clara	St. Regis	25
Bousquet	Franklin	Santa Clara	St. Regis	3
Clamshell	Franklin	Santa Clara	St. Regis	35
Douglas	Franklin	Santa Clara	St. Regis	2
Drain	Franklin	Belmont	Loon Lake	5
East Pine	Franklin	Santa Clara	St. Regis	70
Fish	Franklin	Santa Clara	St. Regis	110
Grass	Franklin	Santa Clara	St. Regis	15
*Green	Franklin	Santa Clara	St. Regis	53
Horseshoe	Franklin	Santa Clara	St. Regis	90
Little Ampersand	Franklin	Harrietstown	Saranac	13
Little Fish	Franklin	Santa Clara	St. Regis	23
Little Polliwog	Franklin	Santa Clara	St. Regis	18
Lydia	Franklin	Santa Clara	St. Regis	20
Monday	Franklin	Santa Clara	St. Regis	6
Mountain	Franklin	Santa Clara	St. Regis	15
Mountain	Franklin	Brighton	St. Regis	50
Mud	Franklin	Santa Clara	St. Regis	11
Ochre	Franklin	Santa Clara	St. Regis	21
Otter	Franklin	Santa Clara	St. Regis	2
Panther	Franklin	Harrietstown	Long Lake	9
Pitchfork	Franklin	Altamont	St. Regis	31
Pond 154	Franklin	Santa Clara	St. Regis	4
Rock	Franklin	Harrietstown	Long Lake	19
Sanjamaw	Franklin	Harrietstown	St. Regis	10
Slush	Franklin	Brighton	St. Regis	15
South Otter	Franklin	Santa Clara	St. Regis	5
St. Regis	Franklin	Santa Clara	St. Regis	340
Tuesday	Franklin	Santa Clara	St. Regis	5
*12th Tee	Franklin	Santa Clara	St. Regis	5
*Whey	Franklin	Santa Clara	St. Regis	110
Whipple	Franklin	Santa Clara	St. Regis	6
Holmes	Fulton	Caroga	Gloversville	15
Nine Corner	Fulton	Caroga	Lasselsville	110
Stewart	Fulton	Caroga	Gloversville	30
Bennett	Hamilton	Hope	Stony Creek	47
Bullhead	Hamilton	Indian Lake	Newcomb	20
Center	Hamilton	Indian Lake	13th Lake	15
Clear	Hamilton	Indian Lake	13th Lake	18
Constable	Hamilton	Long Lake	Big Moose	45
Jockeybush	Hamilton	Arietta	Piseco Lake	32
*Lower Sargent	Hamilton	Long Lake	Raquette Lake	110
Mason	Hamilton	Lake Pleasant	Indian Lake	85
Mays	Hamilton	Long Lake	Big Moose	30
Middle	Hamilton	Hope	Stony Creek	39
*Middle Sargent	Hamilton	Long Lake	Raquette Lake	13
Murphy	Hamilton	Hope	Stony Creek	31
Lily Pads	Herkimer	Webb	Big Moose	9
Little Birches	Herkimer	Webb	Big Moose	5
Quiver	Herkimer	Webb	Old Forge	20
Twitchell	Herkimer	Webb	Big Moose	140
Crooked	Lewis	Watson	Number Four	35
Leonard	St. Lawrence	Colton	Childwold	51
Redwater	St. Lawrence	Brasher	Moira	8
Harrisburg	Warren	Stony Creek	Stony Creek	283
Fishbrook	Washington	Fort Ann	Bolton	35

* Reclaimed in 1956

of inlets, outlets and main river. In addition, four barrier dams were constructed to prevent the reintroduction of undesirable species of fish into various segments of the chain. An appraisal of this project, two years after its completion, indicates that the degree of kill was complete in eight ponds and partially complete in six ponds. In those waters where a complete kill was not obtained, certain species of *native* fish reappeared, but yellow perch seem to have been eliminated.

This project supplied some interesting data concerning survival and growth of stocked fingerling brook trout. As high as 44 per cent of 3-4 inch Fall stocked brook trout were recovered in a two-year period following planting. The number of trout stocked per surface acre, physical and chemical condition of the water and the presence or absence of competitve species of fish were major factors affecting the growth rate of trout. In ponds with low stocking rates, good chemical conditions and having no competitive species of fish, brook trout averaged approximately one pound a year following stocking and better than two pounds two years after stocking. These growth studies provide an interesting commentary upon the unfounded theory that large brook trout cannot be produced, unless forage in the form of fish life is present. This completed project suggests that the reclamation of certain chains of water areas is feasible, depending upon the physical nature of adjoining water and land.

In conjunction with the trout restoration program, a fact finding Federal aid project entitled Game Fish Reclamation Investigations was inaugurated in 1956. The objective of this study is to provide reclamation data for all waters in various northern New York watersheds. Field investigations and biological surveys to obtain soundings, need for barrier dams, extent of tributary systems, springs, bogs, swamps, beaver activity, and, in general information to determine whether waters are feasible for reclamation is being provided by this project.

Reclamation has proven to be an invaluable management method for certain waters. On a dollar and cents basis, it soon returns the investment in the form of pounds of trout. Occasionally, as in all projects involving and concerning license purchasing citizenry, objections are heard. Now that post-treatment angling can be compared to pre-treatment angling, our correspondence on this subject indicates almost complete satisfaction. However, not all anglers catch trout on every fishing trip to a reclaimed pond—if they did, reclamation would truly be a management method unique!

—ROBERT G. ZILLIOX, *District Fisheries Manager, Adirondack Fisheries District*

Chautauqua Lake Weed Control—

An Interim Report

CHAUTAUQUA Lake is well known for its tremendous muskalonge production. Another and generally less desirable product of this biologically rich lake is a luxuriant growth of weeds. The Conservation Department is attempting to reduce these weeds and this article is an interim report on that program.

Chautauqua Lake is naturally a weedy lake since it is shallow, warm, and largely silt bottomed. Reports of long time residents indicate that large weed beds have existed in Chautauqua for many, many years. However, in recent years there has been some increase in the size of the weeded areas and a considerable increase in density of the weeds has occurred in many areas.

Sometimes a dense weed bed causes difficulty or annoyance for swimmers, fishermen, and boaters. The problem weeds of Chautauqua are the submersed or, underwater, weeds such as coontail and parrot feather (*Myriophyllums*), eelgrass (*Vallisneria*), and several pond weeds (*Potamogetons*). Since they present very dense masses of vegetation which rise close to the surface they interfere with various forms of recreation. Fishermen's hooks and boat propellers are fouled and swimmers' arms and legs are tangled in these dense weeds.

The weed beds which reach the surface or very close to the surface have other detrimental effects. Wave action and circulation of the lake waters can be greatly decreased when very dense weeds grow up to the surface. Deeply indented bays can become practically isolated when weeds growing too profusely block their entrances.

The areas where vegetation has caused the greatest difficulty in Chautauqua Lake are concentrated largely in the lower end southeast of Lakewood. In some years Burtis Bay (between Lakewood and Celeron) has been isolated. Flow of water down the outlet of Chautauqua Lake has been slowed by heavy weed growths at the lowermost end of the lake. In several other areas dense weed beds exist, but are not as undesirable since their value to fish may be greater than their interference to recreation.

These difficult and annoying excess weeds plus severe silting of the outlet of this highly valuable lake caused considerable alarm among residents and friends of the Chautauqua region. This concern for the future of Chautauqua Lake resulted in the State Legislature passing, and the Governor signing, a bill in 1955 which authorized and directed the Conservation Commissioner to carry out several controlling, regulating and restorative measures on Chautauqua Lake. One of the phases of improvement for Chautauqua Lake included in this act was "to regulate, control, or remove excessive growths of eelgrass and other aquatic weeds and plants which render certain areas of Chautauqua Lake unsuitable for recreation purposes."

The 1955 work was limited to investigation and analysis of the problems from which to make recommendations for future full scale efforts at control and restoration. The Division of Fish and Game carried out the weed control phase of this investigation.

A map of the weed beds of the lake as they existed in 1955 was prepared. Weed beds were examined for density and species composition. Weed areas were studied for possible detrimental effects and for values.

Several possible methods of aquatic weed control were considered. These included mechanical removal of entire plants, cutting, habitat alteration, and chemical control. Exploration of these possibilities consisted of reference to previous experience, study of literature, consultation with experts, and finally limited field tests.

Mechanical removal, except for cutting, was abandoned as it didn't seem to offer any real advantage and there were no devices available for this type of control. It would have required complete development for no apparent advantage over already tested means.

Habitat alteration such as removal of the silt in which weeds grow most luxuriantly was also dropped. It would be prohibitively expensive in a lake as large as Chautauqua and yet very temporary as enough silt to grow weeds would very soon be deposited on the bottom again.

Cutting is still thought to be a useful weed control method. However, it seems best suited to small, localized improvement efforts such as boat slips, around individual docks, or limited swimming areas. Much cutting has been done in Chautauqua Lake over the years and the value and difficulties involved in this control method could be easily assessed. Major difficulties in the cutting of weeds are the removal of cuttings to prevent their floating about creating new problems and the fact that aquatic weeds grow so fast as to require more than one cutting in a single season.

The abandonment of three of the four "possibles" for major weed control in a large lake left chemical methods as the final hope for a practical answer to the Chautauqua problem. The study of this method showed that sodium arsenite was the most likely chemical compound to give satisfactory, economically reasonable results.

An aquatic nuisance control firm from Butler, Wisc., was hired to apply sodium arsenite to two experimental plots in Chautauqua in August, 1955. The Conservation Department did not have the necessary equipment or experience to carry this out unaided. On August 16th a twenty-acre plot of shallow water (three feet, average depth) in the extreme lower lake was treated by spraying the water surface with a sodium arsenite solution. The following day a seven-acre deeper water (nine foot average) plot was treated in Whitney Bay.

The general method of applying sodium arsenite in aquatic weed control has been described previously in THE CONSERVATIONIST. The method used in Chautauqua Lake is a standard procedure in chemical weed control. A solution of sodium arsenite is pumped through a spray nozzle directed onto the water surface as a barge carrying pump, solution, etc. is propelled over the area being treated.

Within two days the chemical's effect could be seen in the slight browning and barely noticeable sinking of the weeds in the treated areas. Two weeks after treat-

ment the experimental plots were clear of submersed weeds. An occasional single stem survived, but could not be considered an interference to recreation. The weeds had sunk to the bottom as the stems of the dead plants softened.

A few young-of-the-year fishes were killed in the shallow water area, but this is believed to have occurred when the barge was stuck on submerged logs and excess chemical was sprayed in small areas creating "hot" spots. Prompt action at the pump valves could have prevented this. No other undesirable results were observed and the number of fish killed was insignificant, but serves to point up the need for extreme care in applying chemical controls.

The 1955 or investigational phase of the Chautauqua Lake weed control program was completed by analysis of the Summer's research and formation of recommendations for future activities. Chemical weed control seemed to be a useful and economically feasible method of controlling weeds in Chautauqua Lake. Obviously, the long term effects and values were yet to be determined.

From the 1955 findings a more comprehensive program was planned. A three-year program of practical control in the most critical areas was worked out. It is generally conceded that treatments in three consecutive years are usually required to kill the plants resulting from seeds lying dormant in the area through one or even two years. When a clear area is created an occasional treatment of less concentrated chemical will still be required to maintain the condition against reinfestation from neighboring weed beds which will be left for fish food production and shelter.

The 1956 program was carried out in mid-July. It was necessary to let the weeds get fairly well grown to get the best effect of the chemical. It was also felt that we should treat the waters after the numbers of fishermen on the lake had dropped a little below the July 1st opening rush. Radio and newspaper publicity was used to inform the local populace of the planned program and to warn people not to use the areas after treatment until they had been declared safe by the local officer of the State Health Department. Mimeographed information and warning bulletins were distributed in the areas immediately adjacent to the planned treatment areas. The local office of the Health Department assisted in this distribution. Large painted signs were posted in conspicuous places in public accesses to the treated area. All warning and publicity was carried out just before treatment.

The contracting firm began application of the sodium arsenite on July 11th and completed spraying in the evening of July 13th. In three days 338 acres of Chautauqua Lake's 13,000 acres were treated. This consisted of 100 acres of shore to shore treatment in the extreme lower lake (area 1), the entire Burtis Bay (area 2) of 220 acres, and an 18-acre area surrounding the municipal bathing beach at Mayville (area 3). Fifty-five hundred gallons of chemical had been applied. One hundred drums of sodium arsenite weighing approximately 800 pounds each had been rolled up planks from shore to barge.

The Health Department took water samples in the treated areas immediately after spraying and for several days following. These samples were analyzed for arsenic content in their Albany laboratory. When the arsenic content of the water dropped to a safe level (below 1.0 part per million) due to dispersion, dilution, and absorption by weeds the areas were declared safe for use. Ten days after spraying all areas were again open to general and unrestricted use. During the ten days boats traveled through the areas regularly and many fish were caught by anglers in the treated waters. Swimming, use of the water for irrigation or washing, and watering stock was not allowed until the "all clear" was posted.

Notification of the clearance was effected through radio and newspaper releases and by removal of the warning signs. The human telegraph also helped to get the word around quickly.

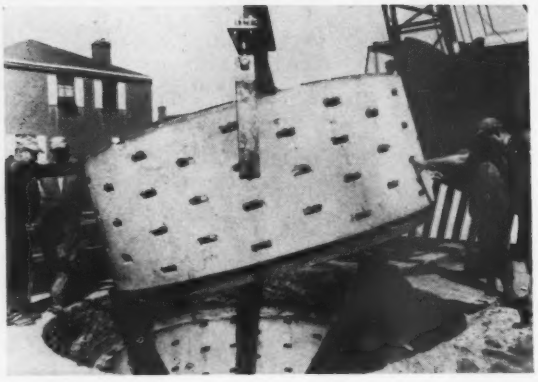
The results were generally very satisfactory. The two larger areas were substantially cleared of weeds. Only a few isolated, small groups of rooted weeds remained in either area two weeks after spraying. After the 1956 weed treatment a general movement of water through Burtis Bay was observed during late Summer for the first time in at least ten years. Fishermen were able to angle in Burtis Bay during the late Summer where fishing had been nearly impossible for years. Improved flows through the extreme lower lake to the outlet were noticed after the weeds dropped. Motorboat operators commented on the relative ease of travel on this portion of the lake where formerly they struggled with weed fouled propellers. Fishing efforts increased here, too.

The general success of the operation did not prevail at Mayville beach. Here, the weeds looked sick for a few days, some died, but most recovered a full, vigorous growth. The water samples from this location show that the chemical concentration in the water never got near the desired seven and one-half parts per million. A strong off-shore wind was blowing during the spraying at Mayville and apparently carried the spray out into the lake and diluted it below an effective level.

In none of the 1956 treatment areas were any fish found killed by weed treatment. No detrimental results were observed in or near any of the treated areas. The general reaction and the co-operation of the public was excellent. There is a general desire among the lake residents to increase the treated areas to include all weeded frontage.

However, plans for 1957 include no major change from the 1956 program. The experimental value of the three-year treatment program could be thrown away by altering the continuous nature of the three-year plan substantially. It is hoped and expected that information and knowledge gained in this carefully controlled and observed program in Chautauqua Lake will be of benefit to all the many lakes in New York State where excess weeds have become detrimental or hazardous. In the meantime, the 1957 plans are progressing satisfactorily and another interim report on the weed control phase of the "controlling, regulating, and restoring" of Chautauqua Lake should be ready next Winter.

—WILLIAM G. BENTLEY,
Aquatic Biologist



Installing concrete core in diffusion well for spot storm water drainage

Impounding basin, lower left and recharge basin, upper right; Garden City, Rockaway Section, L. I.

Water—Nassau County's Treasure

by Meade C. Dobson

MORE than one-third (36 per cent) of all the people in New York State live on Long Island. That adds up, at the present time, to 6,202,000 people crowded into an area of 1,373 square miles and apportioned on a county basis as follows: Nassau County (274 square miles)—population 1,087,118; Suffolk County (920 square miles)—population 452,083; Kings County (Brooklyn) and Queens County, both Boroughs of New York City, (179 square miles)—population 4,622,849.

Entirely surrounded by tidal salt water, Long Island's most vital natural resource problem is fresh water to meet constantly increasing demands for potable water. This is particularly true in Nassau County right now, and will be equally true in Suffolk within the next decade. Nassau and Suffolk must depend solely upon an average annual rainfall of 42 inches to replenish by seepage the underground storage areas of fresh water that have been accumulated there by Nature over many centuries. From this ground water supply, deep and shallow wells must pump an increasing volume of water to supply the annual growth of population and industry.

The Boroughs of Brooklyn and Queens are supplied by New York City with four-fifths of their water needs from the City's vast surface water reservoirs in the Catskill Mountains. The remainder is presently supplied by private water companies pumping from underground water pockets. The City also has long had for emergency needs a series of ten pumping plants across southern Nassau County. This occasional operation is to be abandoned in the near future and it is planned by Nassau County to take over these pumping stations for its future use.

Suffolk County, comprising two-thirds of Long Island's area, is still largely rural, with agriculture predominating. Its recent population increase has been confined largely to the county's western one-third, and for the immediate future that area has ample water resources. However, the Suffolk County Water Authority, created by State law in 1934, is presently having a survey made of the county's water resources.

Nassau County, particularly since '30, has had an amazing population growth of 784,065. In addition, it has witnessed, during this period, an increase of 250 per cent in industrial plants. Fortunately, this phenomenal population growth—with its more than 300 per cent increased demand for water—has been successfully met. This is due to the foresight of the County's Board of Supervisors which, in 1934, authorized the development of a county program of conservation and restoration of the underground water basins. Prior to 1930, with only gradual population increase and with wide areas of open fields and woodlands remaining to absorb the run-off water, the average annual rainfall of 42 inches easily maintained the ground water normal levels.

As the mounting wave of population increased, more and more streets were paved; homes, schools, churches and commercial buildings in great numbers were erected and sewers installed. The run-off waters from pavements and roofs greatly increased and instead of naturally percolating into the ground, were carried away in vast quantities by storm sewers to tidewater. The pumping levels of ground water wells were decreasing. The need, therefore, was to devise and plan a system of drainage that would restore rainfall to the soil and maintain the ground water at stable levels.

Natural surface drainage by numerous small streams in Nassau, impounded in small ponds or reservoirs, provides about 10 per cent replenishment of ground water. Of the total annual 42-inch rainfall, about 40 per cent is absorbed by the atmosphere through evaporation and transpiration from trees, shrubs, field crops and gardens. The remaining 50 per cent of Nassau's rainfall must be assisted artificially to restore the run-off waters to the several underground strata of sand and gravel water-bearing formations. These are dependable storage reservoirs of large capacity, the source for well pumpage at depths of 50 to 1,200 feet. Maintaining a safe level of ground water for increased pumpage was the problem confronting Nassau. How's this solved?

Because of drought conditions through-

out the State, the State Legislature in 1930 appointed a Joint Legislative Committee on Water Resources. This committee was invited by officials of Nassau and Suffolk counties, public water companies, and the Long Island Chamber of Commerce (then the title of the Long Island Association, Inc.) to conduct a hearing on Long Island's water resources, at Garden City Hotel in 1931, with the United States Geological Survey cooperating. This hearing conclusively demonstrated that conservation of ground water was vital to Nassau, and would become so to Suffolk as its population grew. The Legislative Committee recommended engineering surveys of underground water resources by State, County and Federal agencies. These were started immediately and have been carried on through succeeding years.

In 1933 the State Legislature enacted an amendment to the Conservation Law placing the ground water resources of Long Island under the jurisdiction of the Water Power and Control Division of the New York State Department of Conservation. Regulations were promptly authorized by a specially appointed Commission requiring: (1) Well drillers to be licensed; (2) approval by the Commission necessary for wells of various types and pumpage; (3) ground water pumped for air conditioning or refrigeration to be put back in the ground, if uncontaminated; (4) no sewage or industrial waste disposal within prescribed limits of public or private wells; (5) ground water surveys to be maintained. At the same time, the Water Power and Control Division was authorized to make an Engineering Report on the Water Supplies of Long Island (Bull. G. W., 2, 1937).

In anticipation of continued population increase, the Nassau County Board of Supervisors authorized the development of a long-range drainage plan and water conservation program. This was prepared by the County Sanitation Commission and adopted by the Board of Supervisors in 1936. Under this program 385 water recharge basins have been developed. The county maintains 278 of these basins while an additional 107 are maintained in the county by the State, towns and villages. These recharge basins, located within an area of about 100 square miles, mainly in the central part of the county, are estimated to restore 40 million gallons per day to the ground water table; water that heretofore was wasted.

This has been a noteworthy achievement during a pyramiding growth of population in Nassau. The methods of restoration and maintenance of ground water levels is the particular accomplishment that has aroused national and international professional interest by inquiry and visitation. Since 1936 this expanding program has been a tripartite operation between Nassau County, the State Water Power and Control Commission and the United States Geological Survey. They have freely shared their studies, surveys and experience co-operatively. The rapid population growth in Nassau following World War II caused both State and Federal agencies to maintain offices on Long Island as continuous controls, research and surveys are needed. Both agencies operate in Suffolk also.

How Nassau's system for restoration of ground water has been accomplished is of equal interest to all users of water; home owners, commerce and industry, farmers, municipal officials and especially health and educational interests in all areas dependent upon ground water resources. *The New York Times* editorially stated: "Good planning and the gumption to carry it out have paid off in Nassau County's water supply, and while the method is not applicable to all areas, the general principle is certainly worth study everywhere."

The primary problem was to construct storage and seepage basins for collection of run-off waters to be discharged into the underground water levels. Development of effective methods has resulted from a program of intensive hydrological studies of infiltration and evaporation, planning location and size of recharge basins fed by short drainage lines, plus engineering, construction and maintenance. With respect to location of basins, the following factors are important: (1) Topography, (2) location with respect to soil characteristics, (3) relation to existing communities and to future residential or industrial developments, (4) existing and future street systems and principal highways, (5) acquisition of land, (6) enclosures against trespassing and (7) landscaping.

This following brief account of the elements involved in constructing the recharge basins avoids professional and technical engineering and geological terms: First, drilling test borings to determine the character, depth, thickness and extent of the unconsolidated sand, gravel and clay soil that will be pervious to water filtering freely. When location and soil are found satisfactory, size is determined by the drainage area. Basins range from one acre to nine acres in area with 60,000 cubic foot capacity to 3,685,000 cubic feet. Several large basins have been divided into two sections, one for impounding the run-off water, allowing it to settle its silt load and permitting removal of any surface oil or scum which would clog the seepage floor of the recharge basin if directly run off into that basin.

Average water recharge rates are 23 gallons per square foot per day of 24 hours. Tests are constantly being made at all basins. When the basins are dry the bottoms are disc harrowed to increase seepage, and weed growth is exterminated. Close observation of all basins made in all weathers show much variance, as the seasons differ greatly, but expectancy of average conditions have been achieved and charted.

In addition to the large recharge basins, the County's Water Supply Division has developed a system of diffusion wells for spot storm water recharge. These wells receive drainage from wide highway intersections, parking fields, adjacent roofs and yards, and occasional street or highway low flooding spots that need only quick local drainage. Diffusion wells are required for restoration to the soil of uncontaminated water from commercial or industrial air conditioning or refrigeration wells.

These recharge wells are installed with slotted concrete pipes in sections of various sizes of diameter and depth. They are engineered to take care of varying volumes of flood water, and require maintenance to keep them functioning.

Details of this successful Nassau recharge process will be furnished upon request to W. Fred Welsch, Water Supply Division, Nassau Department of Public Works, Old Court House, Mineola.

Looking to the future, Nassau County in 1955 employed an engineering firm to conduct a special survey of the county's present and future water requirements and resources. This report forecasts continued growth of population which would soon double water consumption. Population is estimated at 1,900,000 by the year 2000. Water demands in 1956 were 105,960,000 gallons per day for residential use. In the next 43 years water consumption would reach 252,500,000 gallons per day, the report states. And this does not include the increased water demands of industry. The report further predicts that by 1975 there would remain only 11,000 acres of vacant land in the county and that by the end of the 20th Century the entire area will be built up with homes and commercial units. A further report to come this year will recommend future developments of the county's water supply and facilities for distribution.

In commenting on this program, one of Long Island's leading newspapers, the *Long Island Daily Press*, said editorially:

"Nassau has done a magnificant job in managing its water supply to date. Experts have come from far places to see how it does it. Nassau is to be commended not only for what it has done, but also for its forward look in anticipating the demands of the 21st Century so it can prepare to meet them."

the back of the book

Whazit?

A *Botaurus lentginosus*, of course, as almost any ornithologist will tell you.

Still confused? Translated to common terms, this powder-puff with shoe-button eyes is a baby American bittern; one of the members of the heron family. The bittern travels under a long list of nicknames including thunder-pumper and stake-driver. These names originate from the bittern's call which resembles the sound created in driving a stake into muddy earth.

The streaked brown, black and white plumage of the adults blends well with the lines and shadows of cattail marshes where they stalk the shallows in search of frogs, mice and other delicacies. Fish are taken only occasionally—except for certain individuals that have taken up residence at fish hatcheries.

The nest with its three to five eggs is a flattened platform of reeds and dead grass placed in some secluded spot in a moist meadow or marsh. A few days after hatching, the young are able to scramble off the nest and disappear in the surrounding jungle of vegetation.

The downward directed eyes, characteristic of this group of birds, shows well in this photograph.

Little climates

Weather in the Soil

Climate vitally affects our lives. Wherever we live, climate has largely determined the plant and animal life in that region, the development of civilization there, and what people do. The climate of any region represents its overall weather picture: The sum of its weather today, tomorrow, and during past centuries. We are accustomed to think of climate as a set of conditions occurring entirely in the atmosphere above the earth's surface, and it may sound silly when we say that there are climates underground—little climates just as real as those above—but it's true. There are special kinds of weather in the soil.

Land is not a solid wall. It is like a sponge. There are pores or channels in it. It is a complex mixture of soil particles and air spaces. The spaces, or pores and channels, vary with the type of soil. In sand they are tiny pockets between the grains. In clays they are narrow or threadlike spaces frequently occurring as deep twisting tubes that taper downward. Weather from aloft can invade such pores or channels and produce, in them, underground weather—soil weather with miniature but very real air currents, fogs, drizzles and snows.

Air currents in the soil move generally up and down. Air sinks into the soil because it has weight and is pulled downward by gravity. It rises underground when it is energized by heat and expands; it also rises when it is shoved upward by other air or by water. It may escape above the surface or, if the "push" is weak, into another part of the soil.

Weather conditions underground, such as fogs, drizzles and snows, are created by air currents there and three forms of water. We are all familiar with liquid water and with ice, the solid form, but there is a third—vapor, which is the gaseous form. The latter occurs when liquid water or ice are heated to the point where their tiny particles, filled with energy, are expelled and streak away on separate courses. Widely separated and invisible, they form vapor. If vapor is chilled—its store of heat energy is taken away—the particles are brought together and become visible as liquid water or as ice.

Drizzles and moist fogs are two kinds of liquid water that result from the cooling of water vapor, but a drizzle contains much larger particles which we call "drops." Both occur and travel underground. They are shoved around by subsurface air currents and are valuable sources of moisture for plant roots. At night, sometimes, it is possible to shine a strong flashlight into the cracks or large pores in a soil and glimpse an underground fog or a drizzle.

Ice fogs and snow also occur underground. Sometimes, during Winter months, they develop from moist fogs and drizzles chilled to or beyond the freezing point by cold air currents in the soil, and may be moved about by such currents. Ice fogs are composed of minute particles; snow particles are much larger and more visible but both may be seen occasionally by exploring with a flashlight at night. Eventually they are melted by warmer air currents, or by contact with deeper warmer layers of soil, and provide moisture for plants.

Underground moisture, from whatever source, is never "pure" water. It always contains dissolved gases and minerals of various kinds—some gathered by rainwater as it falls from the sky; some absorbed by subsurface fogs, drizzles and snows. Rainwater, for example, gathers dust particles and carbon dioxide gas. Plant roots suck in such moisture and then the dissolved gases and minerals are changed into foods that sustain plant and animal life.

Little climates, underground, are real and vital.—ROBERT H. KELLY

Globe trotting

We like subscribers—wherever they may be; and many are! To unscramble that one, we have, we're pleased to say. CONSERVATIONIST readers in so many foreign lands that the mailing directory sounds like a super "Cook's Tour." Latest check showed the magazine regularly going to subscribers in Canada, Alaska, Canal Zone, Hawaii, Newfoundland, Puerto Rico, Colombia, England, West Germany, Holland, Portugal, South Africa, Australia, Venezuela, Norway, Luxemburg, Bolivia, India, Haiti, Mexico, France, New Zealand, Lebanon, British West Africa, Indonesia, St. Croix, V. I., British West Indies, Spain, San Salvador, Scotland, Denmark and Guam.

Trudeau sold

Trudeau Sanatorium, famous center of tuberculosis research and treatment at Saranac Lake which closed two years ago for lack of patients, has been sold to the American Management Association for use as an educational and research center. Trudeau Foundation board has accepted the arrangements by the American Management Association to purchase the property subject to court approval.

The 90-acre site in the Adirondacks and its more than 60 buildings will become a special management center expanding the Management Association's educational programs for business and industry.

The A. M. A. is a non-profit educational organization devoted to enlarging and disseminating information on management science.—R. B. MILLER

Man & tree

Frank Lloyd Wright, dean of American architects, recently had this to say about the use of wood in modern home construction: "Wood is a friend of mine. The best friend on earth of a man is the tree. When we use the tree respectfully and economically, we have one of the great resources of the earth. . . ."

Grouse food in the making

The above photograph shows one of the many apple grafts made on the Bear Spring Mountain Game Management Area this past year. Several hundred grafts were made and we had roughly 95 per cent success. It is fairly easy to do providing one uses some care, and of course, information on how to to graft can be obtained from an extension bulletin published by Cornell University.

It seems logical to suggest that this is one of the best ways sportsmen's clubs can provide food for grouse, deer and rabbits by making these grafts in old orchards. There are thousands of such opportunities available—and incidentally, a little pruning would not hurt either.—ALBERT G. HALL, *District Game Manager*

Ed. Note: — See "Apples for Grouse," CONSERVATIONIST *for October-November, 1955.*

Wood particle board

This newest by-product of the lumber and wood product industries is made of waste residues from logging, sawmilling, and product manufacturing and is another step forward in the wise use of our timber resources. It is composed of small wood chips, flakes, splinters or similar particles mixed with glue binders and cured with heat under pressure. Predominantly a sheet material it varies in length, width and thickness and also lends itself to molding into various shapes. Present uses include furniture and door cores, decorative wall paneling, cabinets and fixtures, with potentialities as sheathing.

Different than hardboard and softboard in which the wood fibers are separated into a pulp and rematted, particle board is made of wood in its natural form. Examples of these different types now on the market are Masonite, a hardboard; Celotex, a soft or insulation board; and Novaply, a particle board.

Wood particle board development started in the United States just before World War II but made little headway until after the war when resin binders became available. Today there are 35 plants.

Report from Alabama

Alabama has recently completed a farm pond investigation, one objective of which was to determine as closely as possible the major factor or factors which resulted in unsuccessful or unbalanced farm fish ponds. Ponds included in the investigation were stocked with a bluegill, shellcracker, (a variety of sunfish) and largemouth bass combination.

Results to date indicate that three principal factors were the cause of or contributed to pond failures. The major factor apparently was the presence of wild fish in the ponds prior to stocking hatchery fish. Another cause of failure was the migration of wild fish into ponds where precautions had been taken to eliminate wild species before stocking. A third factor was removal of bass before they had a chance to spawn.

Pollution control—continued

The State Water Pollution Control Board recently announced plans for a survey leading to classification of the waters of Lake Ontario between the Niagara and Oswego rivers.

The engineering survey is the first step in drawing up a pollution abatement plan for many waters in the State. After the engineers make their study, the waters can be classified as to the best possible usage that may be made of them. Classification is then followed by drawing up a pollution abatement plan.

Dr. Herman F. Hilleboe, Chairman of the Water Pollution Control Board, said engineers were assigned to the area to do preliminary surveying work before the end of January. As soon as the 1957 field work season opens about the middle of April, the mobile laboratory will be moved into the region.

In addition to Lake Ontario, the survey will include the smaller surface streams directly tributary to Lake Ontario that have not been previously surveyed. The drainage basin extends over a lake front area of 150 miles in Niagara, Orleans, Monroe, Wayne, Cayuga and Oswego counties.

Wildlife homes

Wildlife homes are given special attention in the 20th annual Wildlife Conservation Stamps, the 1957 series now being distributed by the National Wildlife Federation.

Six of the 36 stamps, reproductions of water-color paintings by leading nature artists, show typical forms of natural wildlife homes. A barn owl, for example, is shown delivering food to fledglings in a hollow-tree nest. Beavers are shown constructing a lodge, and another stamp depicts the tiny underwater "cradle" built by the little fish known as the stickleback.

Another group of six stamps shows wildlife homes of the kind that can be provided by man in conservation projects. Separate subjects depict a nesting box for wood ducks; a multiflora rose hedge providing cover for quail and other small game; a brush pile for cottontails; marsh management for waterfowl; and a farm pond, which can provide haven for many forms of wildlife.

Lew Morris

Lewis Morris has retired after 44 years as Game Protector for the Conservation Department. He joined the Department in 1912 and retired recently, serving ing as Game Protector until 1942, when he was appointed Assistant District Game Protector of the Rochester Division.

During his years of service Lew estimates that he tallied up close to a million miles of travel by horse and buggy, train, bus, automobile and afoot. He was driving his 24th automobile at the time of his retirement.

More than this, Lew who earned the reputation of being absolutely honest and impartial with everyone, retires with the wholehearted regard and respect of his fellow workers and the public he has served—including some who became acquainted with him the hard way as violators of the Conservation Law.

Assistant District Game Protector Lewis Morris, left, accepts gift from District Game Protector Clifford Moore of the Conservation Department's Rochester Office at retirement dinner.

Rainbow Trout-Tagging

(Continued from page 8)

There's another advantage, and that is creation of more pools for holding large fish. This means more fishing holes and more even distribution of fishermen along any one stream—particularly Catherine Creek.

The distribution of the catch among fishermen in the different streams in 1955 was similar, and data are combined in Figure 5. Two facts are clearly shown. First, most fishermen (91 per cent) were looking for alibis. Secondly, a very small percentage caught their bag limit of five fish. This shows that the present bag limit does not materially restrict the catch, therefore increasing the limit would not provide a means for increasing the total catch. Only a small proportion of expert fishermen would benefit.

Present data suggest the lake populations of rainbow could stand considerably more fishing. Extension of the lake season into the Fall months would provide additional fishing opportunity and seems to be the logical first step, although associated species, particularly lake trout, must be considered in this connection. When present studies on growth and mortality rates are complete, we will be in a good position to judge just how far the liberalization of fishing opportunities can go without impairing production of Finger Lakes rainbow trout.

The "angora" rabbit

Freaks of Nature are a commonplace part of our lives today. For example, new hybrid plants are eagerly accepted by a vast army of gardeners each Spring; and a coat, jacket or scarf of mutation furs rates high in milady's dreams. Many of today's prized plants or animals are the end result of one of those "one in a million," chance meetings of two individuals with complementary but dormant factors, normally (and nearly always) over-shadowed by the more dominant factors which produce the standard characteristics of a species.

Our wild animal populations also produce freaks or "sports," but because of the secretive nature of most wildlife these are less likely to be noticed. The more common abnormalities observed are the albinos and melanistics (black) where the color departure from normal is striking. Another example of an abnormality is illustrated by the cottontail rabbit pictured here. This rabbit was normal in every respect except for a dense growth of very long, dark grey hair on the back and sides. It was shot late this past season by Charles Yager, Liberty, who turned it over to Protector Burton Lindsley who, in turn, forwarded it to the Department's Research Center at Delmar. This is the second record of this pelt condition in cottontail rabbits we have seen in recent years.

Another Spring—Another Generation

(Continued from page 23)

as it is called. At hatching, its brood of four are naked and helpless except for their gaping mouths that are good targets for a billful of insects. Their prodigious appetites keep the parents busy —even busier if the brood includes a husky cowbird.

Many feathered youngsters are fed insects. Pigeons seize the bills of the young in their own and pump into the young stomachs some "pigeon milk." A few days later the diet includes softened grain. Young herons reverse the feeding procedure. They grasp the laden bills of their parents and literally shake the food out into their own. Owlets often gulp chunks of flesh torn by the female from carcasses carried to the nest. The precocious chicks of the pheasant and grouse, however, must find their own food almost from the time the egg-tooth taps the way to freedom.

A clutch of 10-20 pheasant eggs would seem more than adequate to meet the demands of Nature. Yet a brood of young chicks scratching its way through the weeds and grasses is a target for a host of predators. Ground-nesters are also more susceptible to disease and adverse weather than are the tree-nesters. A cold, rainy night may well be fatal for an unprotected chick. Predators, weather, gunners and disease all take their toll. From a nest of 15 eggs in Spring, perhaps as few as five or six will survive until gunning season, and only two or three until the following Spring.

Ruffed grouse chicks may number 10 to 15 at the Spring hatching. Life for these downy young is rigorous. They, like the chicks of the pheasant, duck, goose or chicken, must find their own food from the first. They, too, are subject to the pressures of predation and inclement weather. A motionless chick is an almost invisible one, but a few will inevitably be found and eaten. An occasional chick will stray from the protection of its mother and die from exposure. Barring adversity, however, the chick will try its wings in two weeks, and be an adept flier in three. Independence will be tempered with caution, and experience will teach the youngster many tricks of evasion (how well I know!). By Winter the brood will number only three or four, but the replenishment of the preceding Spring will have served its purpose. Grouse will continue to whirr in the hemlocks.

Replenishment is thus a wonderful and complex process. Much of its wonder lies in the variety of ways that have evolved to insure that a few survive to perpetuate the species. Apparently two great horned owlets, often brooded while snow still covers the ground, are sufficient to insure perpetuity, yet not too many to cause undue competition. Perhaps a brood of fewer than four chippies would cause serious shortages in their numbers, since rarely do all the young of any species survive the year. For four crows hatched, three may survive; for fifteen pheasants, perhaps three.

So it goes. Those that have the least chance for survival must reproduce in greater numbers. The fawn, lying motionless among the ferns, is far safer than the meadow mouse threading its way among the grass. No year, however, permits all creatures to see it through. Some must inevitably perish along the way. So Nature each Spring banks some wildlife for the checks that must be written in the months ahead. Men may mortgage themselves to the hilt with promises to pay, but Nature must ever pay in advance, for a mortgaged crop is the path to extinction. Spring replenishment is a process of promise. It is a natural economy that must not fail.

Conservation in school

Sportsmen of Schenectady County, organized as the Schenectady County Conservation Council, Inc., are an imaginative and progressive lot. Last year they proved it again by sponsoring a conservation essay contest for grade school children in the Schenectady area. With the cooperation of area schools, the children were encouraged to submit essays on any natural history or conservation problem important in New York State.

Essays (there were approximately 60 entries) were judged according to grade level, by Dr. Gustav Swanson, Head of the Department of Conservation, Cornell University, Prof. Harlan Brumstead,

Conservation Department, Cornell and Earl Douglass, Schenectady County Soil Conservation Service. The prizes given the five winners were one year subscriptions to THE NEW YORK STATE CONSERVATIONIST.

We are pleased to print here one of the first prize-winning essays—this one on soil conservation by 14-year-old Allen Anderson of the nine to twelve grade group.

THE WHY OF SOIL

"Soil is the most important of the major essential elements. I say soil because soil supports all forms of life, either directly or indirectly. Man couldn't exist either without water but water gets its minerals and other elements, needed by plants, from soil which the water runs over.

"Soil is formed and destroyed by erosion. In the beginning the earth was a solid ball of rock but by expansion, contraction, wind and water erosion, it slowly (after millions of years) broke down to very small pieces which then formed the beginning of our soil. Later on decayed plant and animal matter came into the soil, this made the soil very rich. Man didn't realize that the soil wouldn't go on forever if he didn't conserve it, so when he had farms he would live there until the soil was worn out and then he would move to better soil. This went on for many years and the soil was being washed off of the land, because there was nothing to hold it down, and into waters where it polluted rivers and streams. When he finally realized this he used contour plowing, strip cropping, diversion ditches and other good conservation practices.

"Soil produces plants which take in carbon dioxide that we and other animals breathe out and gives off oxygen. We get food from animals that depend on plants and other animals for food.

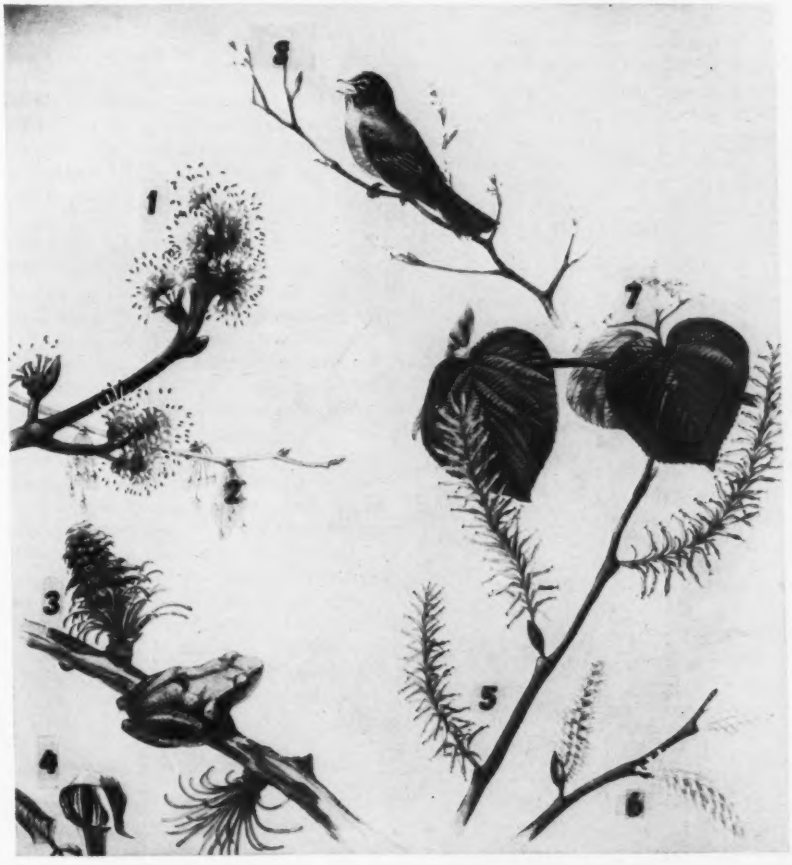
"In conclusion, without soil there wouldn't be any oxygen to breathe, plants and animals to eat as food, or water to drink and to keep plants and animals alive. So without soil the earth would be a hot, dismal, forbidden place without any signs of life.—ALLEN ANDERSON"

Wood still leads

Wood, the most popular material in home construction, registered new gains during 1956, according to a nationwide survey by the Bureau of Labor Statistics. The survey disclosed, for example, that lumber was used structurally in the exterior walls of 83 per cent of the single-family houses built during the first quarter of 1956. This compared with 77 per cent a year earlier.

The survey also revealed an overwhelming preference for wood kitchen cabinets. Eighty-eight per cent of the first quarter houses featured kitchen cabinets built entirely of wood, according to the survey's findings.

the front cover



Reproduction of Spring painting by H. Wayne Trimm

The cover on this issue is in the Spring mood, but is not merely, as some readers might think, a bit of whimsical fancy. Despite the artistry of the composition, each of the individual drawings is meticulously faithful to the facts of life, as the botanists among our subscribers will instantly recognize. Those twigs, for instance, on the upper left are nothing less than those of the red maple (Number 1) bursting into bloom ahead of the leaves and (2) the elm with its familiar clusters of wafer-like fruit. Below this (3) is the young cone of the larch tree, really a flower at this stage, with its petals poking out from the leaf cluster. The tree-frog is thrown in for scale (how big is a tree-frog?). Everybody of course, will recognize the Jack-in-the-Pulpit in the lower left-hand corner (4), and most people have seen the willow catkins in (5) and (6); but how many can distinguish the fertile flowers (5) that produce the millions of tiny seeds, from those (6) that produce pollen only?

Now we come in Number 7, to that bugaboo of timber cruisers, lumberjacks and assorted bush-whackers, known throughout the North Country as "Witch Hobble" or in the textbooks as "Hobblebush," from its propensity for tripping up the unwary. Botanically it's a Viburnum and some of its city cousins are often seen in shrub borders and foundation plantings. the big white flower clusters are a striking feature of the Spring woods, if you happen to be in the right locality. Number 8, with a robin perched thereon, is of course the shadbush or serviceberry, (see THE CONSERVATIONIST, April-May, 1951), whose milky-white flowers will soon be breaking out over the landscape. —E. W. LITTLEFIELD, *Asst. Director, Div. Lands and Forests*

New "Wrinkles" at the Hatchery

Rice type feeder

Feeding finely ground meat to trout in troughs or raceways requires the production of many small particles of meat without having the meat dissolve in the water. Early fish culturists used a feather for this feeding, alternately dipping the feather in the ground meat and shaking it in the water.

A later but doubtful improvement was mixing the ground meat with water and pouring it in the troughs from a sprinkling can. Although used for years, this method produced very heavy pollution of the water.

Since the efficiency of feeding is determined principally by conversion—that is the pounds of food required to produce a pound of fish—it was evident that better methods of feeding would have to be developed. Pollution indicated a waste of food.

The next development was dippers with perforated bottoms. When these were filled with meat and shaken with the bottom at or just below the water surface the meat came out in uniform particles with very little pollution. However, if the man operating the grinder was careless and particles of fat got in the feed, the shaking of the dipper didn't dispense the food properly. Obviously more power was required to push the meat through the dipper bottom.

In the 1930's the potato ricer principle was first utilized to increase the available pressure. At many hatcheries this principle is used exclusively for trough feeding. The conventional ricers are not entirely suitable for hatchery use without some modifications, chiefly closing the opening on the side and fitting the bottom with a perforated metal plate. This type of feeder proved highly successful for troughs but was too small for races and required frequent filling.

Many hatchery men, using the ricer principle, developed a larger feeder holding up to five pounds of ground meat. These re-vamped models did a very good feeding job but some were awkward and hard to manage. Last year at the Rome Hatchery, D. C. Haskell, working under a D-J Federal aid project, developed a new feeder of improved design. The pictures illustrate the working parts as well as a feeder in operation. The new features in this model are that the weight of the feeder is directly below the user's hand so that there is no strain on the operator's wrist as with a dipper or some of the older feeders. The feed is forced out by squeezing down on a handle using the same hand that holds the feeder. The feeder is filled and cleaned by unscrewing and removing the bottom.

One or more feeders of the above described type have been furnished all trout hatcheries during the past year. Some have been designed with an elongated operating mechanism making possible the feeding of small ponds. The feeders were made by Earl Stiles and his crew at the South Otselic Hatchery during the Winter months. It is now the policy for all trout hatcheries to use this type of feeder for meat feeding of small trout in troughs and races.—K. B. NICHOLS, *Supervisor, Fish Culture*

Compressed air fish feeder

Present day hatchery trout diets consist of a combination of meat, dry meals, yeast and vitamin supplements. The meals and supplements are combined in pellets and fed on alternate days with meat.

Pellet feeding probably represents the ideal method of presenting feed to the fish. The pellets are broadcast over the pond surface so that each individual fish has an opportunity to secure his share. The pellet size is varied according to the size of the fish so that the pellet may be ingested easily. The ideal in feeding meat is to obtain a similar broadcast of meat particles.

When ready to feed, hatchery meats are similar to rather moist hamburger. If skipped across the water a spoonfull will break up into a number of pieces of varying size. The shearing action of the water is thus utilized to break the meat apart. However, shaking the meat in the water or throwing it through the water causes a part of the meat to dissolve, resulting in lower food value and pollution of the water. Proper feeding by this method is a skilled and laborious task so that results largely depend on the care of the individual man.

Starting with the objectives that (1) it would be desirable to break the meat into particles of the right size before it hits the water, (2) that the particles be of uniform size, and (3) that a method be used to broadcast these particles in the same way that pellets are scattered, a compressed air feeder has been developed. The equipment consists of a materials pump which pumps the meat from a container through a hose to a spray gun. At the spray gun the meat is mixed with compressed air which breaks it into quite uniform pieces and gives it a velocity sufficient to throw it twenty feet across the pond. The materials pump is driven by compressed air. Compressor and pump are mounted permanently on a truck. The same truck carries the ground meat in 175-pound cans, and a set of platform scales.

In feeding, a can of meat is placed on the scales, and the pump put in the can. The meat can then be weighed by differences, and each pond given its predetermined amount. One man manipulates the scales and feed gun, spraying the meat over the pond, while a second moves the truck along as feeding progresses.

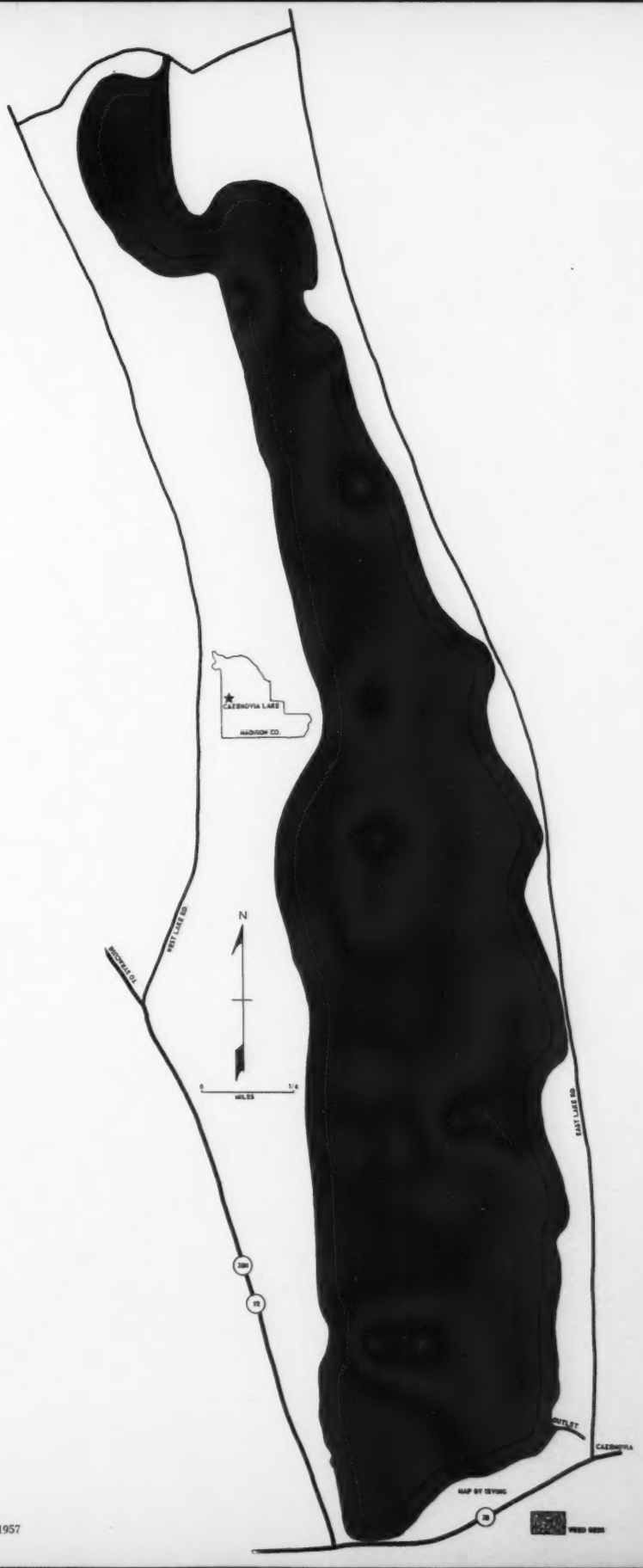
The method results in uniform feeding, and a reduction in pollution. It is expected that when a compressor large enough to permit continuous operation is obtained, that a saving in labor will result. In a preliminary experiment the compressed air feeder appeared to produce better growth. During the Summer of 1956 the outfit was given a thorough use trial, feeding all of the ponds at the Rome Hatchery, and it is now considered standard practice at this hatchery. Extensive growth studies are planned for 1957, following which a more technical report will be prepared.

The development of this apparatus was accomplished under the D-J Federal aid program. — DAVID C. HASKELL, *Fish Hatchery Foreman*

Tallest tree

Forestry club students of Humboldt State College in California recently discovered what is claimed to be the world's tallest tree—a specimen 368.7 feet high.

Cazenovia Lake



Location

West-central Madison County near Village of Cazenovia

Physical Features

Area: 1,100 acres
Elevation: 1,190 feet
Maximum Depth: 48 feet
Length: 3.8 miles
Width: 0.6 mile
Drainage: Outlet waters flow north into Oneida Lake via Chittenango Creek

Chemical Characteristics

Oxygen: Present in quantities adequate for fish life except in a small area of the deepest water
pH: Slightly on alkaline side from top to bottom

Fish Present

Pike-perch, Smallmouth bass, Largemouth bass, Chain pickerel, Rock bass, Yellow perch, Bullhead catfish, Common sucker, Common sunfish, Various minnows

General

Boat liveries and tourist accommodations are available. An excellent fishing water where all species attain large size indicating a healthy fish population. A luxuriant growth of aquatic plants in the shallow water and especially at the north and south ends of the lake make fishing difficult during the Summer months

—A. C. Petty,
District Fisheries Manager

The "Money Tree"(s)

Does good forestry pay? Just ask retired Army Captain Leslie Gumport of R. D. 1, Greenville, and you'll get an emphatic "yes" answer. The Greene County man states flatly that his 37 acres of woodlands "are growing into money faster than the same amount invested in bonds, stocks or in a savings bank."

So convinced of the wisdom of good forestry is Captain Gumport that his will includes a stipulation that forest management must be continued in these woodlands after his death for the financial benefit of his survivors.

But even though his main woodland management objective is to build up the stand for future benefits, Captain Gumport has been realizing current income through judicious, selective harvests of mature timber. Three different cuts in the past 10 years, carried out under the guidance of Conservation Department foresters, under the Forest Practice Act, have given him a return of $2,800. The money, he says, came in handy to supplement his Army retirement pay, but even more important was the improvement in the woodland through the removal of slow growing mature trees.

In addition to the selective harvests, the retired Captain, puts in about five or six hours a week on work to keep his woodland up to its maximum productive capacity. He is eliminating space-hogging "wolf" trees and thinning crowded stands by applying sodium arsenate to kill unwanted trees. He also has planted seven acres of conifers which he thins for Christmas trees.

Carrying out these excellent practices made Captain Gumport a natural for certification in the American Tree Farm System, a nationwide conservation movement which encourages good forestry by giving public recognition to those owners who are practicing forest management, and Captain Gumport was among the 38 New York charter members.

When he moved to his present home, the Captain recalls, his neighbors were skeptical when he told them he was going to use his woodlands to grow trees as a crop. Now, after seeing results in a little more than 10 years, they are looking to him for advice and assistance on caring for their woodlands.

Captain Gumport attributes his interest in forest management to the days when he was serving as a Civilian Conservation Corps camp commander in 1933 to 1936 where he saw sustained yield timber operations carried on by Potlatch Forests and the Diamond Match Co.—HAROLD D. ELLIS, *American Forest Products Industries, Inc.*

New market for larch

We have been informed by our foresters in the central part of the State that a local market is developing there for certain plantation thinnings—red pine at the moment, but with possibilities for European and Japanese larch for use as posts and poles. This should come as good news to landowners in the area whose plantations are in need of thinning.

The Koppers Company purchases suitable material of this nature at its plant located near Horseheads. The future posts and poles are accepted with the bark on and run through a rossing machine which removes the bark—welcome information for anyone who has tried peeling it off. After the debarking process the material is allowed to season and is then pressure treated with a creosote preservative. The finished product is then placed on the market for sale with most of it being retailed through GLF stores in the vicinity at the present time.

Utilization of plantation thinnings, especially those of the smaller sizes, is one of our toughest management problems. Many landowners enthusiastically set out hundreds of acres of plantations each year not realizing that within 15-20 years the small seedlings will have grown to the point where they must receive some sort of cultural treatment if the plantation is to continue to grow and develop as it should. But unless there is some financial return from material removed in the cultural operation there is not much incentive for the average owner to undertake the necessary improvement work. As a result many plantations with high potentials grow to a point of stagnation and remain so for many years until Nature takes an unsystematic hand in the matter.

The development of markets such as the Koppers Company may be the incentive many people need to start improvement work. Owners should keep an eye on their plantations and remain in touch with the District Foresters who are ready to help with management and marketing advice.

Texas vs the coypu

In THE CONSERVATIONIST for June-July, 1956, we printed a picture of the coypu (nutria) and described the depredations of these big aquatic rodents on the sugar beet crop in England. A recent news release from the Texas Fish and Game Commission suggests it's not necessary to go so far afield for an indictment of these marsh dwelling importations from South America.

Imported into Texas a few years ago in the hope they would eat unwanted vegetation that interferred with fishing and boating, the coypu, according to the Texas Commission, are finding farm crops much more tasty. Moreover, they add, the animals are competing with the muskrats in the coastal marshes, causing much economic loss to trappers—and they are extending their range and increasing in numbers—thanks to their terrific reproductive rate; up to three litters a year with as many as 11 young per litter.

New York apparently was on the right track when last year the Conservation Law was amended to prohibit the importation of nutria except under permit for scientific, exhibition or breeding purposes.

Harbor seal

Game Protector Stephen Pradon and harbor seal found dead February 20, 1956 on the shore at Ashoroken Beach, Northport, Long Island. The seal which weighed approximately 150 pounds and measured 5 feet, 4 inches overall length, apparently came to grief from a bout with a boat; it had a long gash across its throat.

Bears and beechnuts

There's not much that bears won't eat —from nice juicy grubs ripped out of an old stump to nice juicy hams ripped out of camp iceboxes. Aside from honey, however, nothing tickles bruin's palate more pleasantly than beechnuts, and last Fall bears with tickled palates were happily clambering up beech trees to harvest the bountiful crop—as evidenced by their claw marks—on this beech tree photographed on Whiteface Mountain by John F. Daly, Department Secretary.

Flomos

The Fish and Wildlife Service, in its campaign against the lamprey eels of the Great Lakes, is experimenting with thousands of toxic substances in an effort to find a practical control method. What's needed is a poison that will kill the lampreys during their upstream spawning migration; will not kill other species of fish and be cheap to produce and apply.

Among the toxics now being tested is a fluid derivitive of a weed—flomos, native to certain islands in the Mediterranean. Years ago, Greek fishermen discovered that the milky sap of this weed, when introduced into the water, acted on the nervous system of fish, causing paralysis.

Deep water shocker

Electric fishing methods are fairly new. Prior to World War II, little was known about the characteristics of electricity in water or its effect upon fish. However, through increased technical knowledge, development of electric fishing devices has been carried out in many countries and in all types of water from oceans to mountain streams. Each kind of water offers unique problems. New type devices co-ordinated with sonar are providing increased catches of marine fish at present, and a shocker recently developed in New York State is effective in the clearest of mountain streams.

During the past three years, Conservation Department biologists in New York, working under Federal aid fisheries research projects, have developed an electrical fish catching technique which is often more effective than netting. The new device is effective in lakes up to 20 feet in depth in some instances and has already greatly facilitated the capture of some species of fish for biological purposes.

Very simply, the rig may be described as a large boat, equipped with a 230 volt, alternating current generator connected to cable electrodes which are hung over the sides in any position desired. The electric field that is set up around each electrode varies in effective radius in accordance with the conductivity of the water. In waters of poor conductivity, more electrodes are added in order that the field may overlap.

Development of this electric shocker has actually been carried out more or less independently and with variations in Illinois, Ohio, Florida and New York and has proved successful for several types of work. The methods for capturing the fish is basically the same in all areas. The boat is merely run around the shallower areas (up to 20 feet) of lakes, rivers and canals. All fish that are overrun by the electric fields are temporarily stunned and many can be scooped up with dip nets. Most, although not all, fish species in a body of water are available for shocking at certain times of the day and year.

The deep water shocker rig. Note lights for night operation

Shocker crew at work

In New York State the lake shocker has been developed for night operations that have proved to be many times more effective than daylight shocking or conventional netting. Spotlights are mounted on the boat with the bulbs underwater; the device is then operated as described, but with distinct advantages over daylight shocking. In the first place, fish appear to congregate in the shallower areas at night, and thus are obviously available in greater numbers at that time. In addition, the lake surface is usually calm and glassy at night and the dipnetters are not impeded by the reflection of sunlight from the water surface. Some catches have been truly phenomenal. In Lamoka and Waneta lakes, for example, as many as 1,000 legal-sized bass have been shocked in a night, together with thousands of fish of other species. Some species, such as alewives, can be collected by the thousands at the surface even over deep waters.

At the present time, biologists in several states, including New York, are attempting to develop a deep water, electrified trawl which will compliment the boat shocker. This device will be pulled through the water at desired depths according to preliminary sonar work indicating dispersion of fish at definite levels in lakes. In other words, the trawl will "electrically" fish the water at the particular depths that fish are inhabiting at that time.

The use of electric devices developed to date should greatly increase the efficiency of biologists who must capture fish for various studies, and should result in savings in money and energy. It is conceivable, in fact, that further research in this field may make possible the development of fish getting techniques so efficient as to replace conventional netting. — H. A. Loeb, *Aquatic Biologist*

Second highest sale

Sale of Christmas trees from State Forest plantations in 1956 set the second highest year record with a total of $36,838.92. Top year was in 1949 when yule tree sales reached $40,806.

Thirty-two thousand six hundred fourteen trees were sold in 1956, with Scotch pine (25,365) the favorite.—R.B.M.

Letters to The Editor

The Milmoe Committee

and

The Forest Preserve

Dear Editor: Our Council has received numerous complaints about the proposal of the Milmoe Committee to dispose of public lands at a time when the public is increasingly in need of such lands due to the posting of private lands on a larger scale in recent years. It is therefore the hope of the Oneida County Forest Preserve Council that Mr. Milmoe will show more genuine interest in the fisherman, hunter, and outdoor recreationist by changing his recommendation so as to increase rather than decrease the public Forest Preserve lands in Oneida County. Such lands would be protected against tree cutting and lumbering by Article XIV, Section 1 of the Constitution.

It would seem to be in the public interest to spend public funds for such purposes; in fact had the more than $100,000 spent by the Milmoe Committee in recent years been used to enlarge the State lands instead of searching for a way to sell them, we would all be better off.

Typical of the thinking of the Committee is their emphasis that a small lot containing a house and no trees must be a part of the Forest Preserve, whereas a plot of nearly 1,000 acres in Oneida County, covered with forest, they suggest cannot be part of the Forest Preserve because it was cleared land when acquired. A biased opinion of this kind suggests that the Milmoe Committee should be discharged and their funds used for the purchase of land for the Forest Preserve.

A further indication of the peculiar intent of Mr. Milmoe and his Committee is the recommendation that in the future all money spent for Forest Preserve land be spent only inside the Adirondack Park boundary. All of Oneida County is a Forest Preserve County, but only a small part of Oneida County is within the Adirondack Park. Therefore Mr. Milmoe's proposal would deny the benefits of protected Forest Preserve land to most of our county. We are distressed that the Senator in our neighboring county shows so little interest in the welfare of Oneida County sportsmen, nature enthusiasts and the public generally.

Mrs. Hobart L. Morris,
Secretary, Oneida County
Forest Preserve Council

• I am grateful for the privilege of reviewing the statement regarding the activities and proposals of the so-called "Milmoe Committee" prepared by Mrs. Hobart L. Morris, Recording Secretary of the Oneida County Forest Preserve Council, and published in the December 26, 1956 issue of The Observer-Dispatch *of Utica, New York. I understand that Mrs. Morris has also submitted this same statement for publication in* The Conservationist.

At the very outset I should like to make it clear that I do not take any affront from Mrs. Morris' attack on me personally. As an elected official, I learned long ago that anyone in public office must expect to be criticized. Fortunately, in our country the right to criticize our public officials is one of our most precious rights.

However, I do resent this unwarranted attack on our Forest Preserve Committee which is composed of as fine and dedicated a group of unpaid citizen advisors as it has ever been my pleasure to work with in public service. Nine of the fifteen members are well known as conservationists and leaders in conservation. The other six, representing the press, local government, agriculture, and residents of the Adirondack Park —are men of unimpeachable character.

During the past four years these men and women have spent hundreds of unpaid hours attending meetings, taking part in field trips, and other Committee duties—at great personal sacrifice—and it seems to me that they are entitled to something more than a misleading and unfounded attack on their work—as a reward for their public service.

Moreover, I am especially anxious to keep the Committee's record straight in the pages of The Conservationist*—for it was here, through a thought-provoking editorial which appeared in the Fall of 1951—that our legislative study of the Forest Preserve had its first public stimulus. In the ensuing years the Committee's work has been faithfully and accurately reported, and we are grateful too, for the support given our work by three different Conservation Commissioners.*

The first and most important accusation made by Mrs. Morris has to do with her attempt to show that our Committee, for some incomprehensible reason, is attempting to sell off or otherwise dispose of the State's Forest Preserve lands which are so highly prized by our people. In her zeal in this matter Mrs. Morris goes so far as to say—"... in fact, had the more than $100,000 spent by the Milmoe Committee in recent years been used to enlarge the State lands instead of searching for a way to sell them, we would all be better off ..." Actually, of course no such amount has been spent on the study of detached areas by our Joint Legislative Committee or the Advisory Committee on the Forest Preserve. The truth is that we have a very nominal appropriation averaging about $30,000 a year which must cover all of our studies in relation to air pollution, water pollution, the Forest Preserve, the problem of small watershed projects and all of our other interests in the natural resource problems of the State. Moreover, in respect to the Forest Preserve—the problem of detached areas is only one of a number of very big problems to which our Advisory Committee has addressed itself.

Also, contrary to the impression Mrs. Morris attempts to create, it is a matter of record that the Advisory Committee has not only recommended enlargement of the Adirondack Park but has actually accomplished such enlargement by a law passed last year. This year we have a similar measure to enlarge the boundaries of the Catskill Park which we have every confidence will be passed and become law. Furthermore, since our legislative studies were taken, and in line with our recommendations, more acreage has been added to our Forest Preserve holdings than was the case for many years. The fact that the Committee has realistically faced the problem of very small detached areas which never should have been made a part of Forest Preserve has been seized upon and twisted so as to make it appear that the Committee's objective is entirely different than the record shows. Again, the facts are that of more than five hundred detached areas—115 are less than one acre in size, and over half are less than 10 acres in size. *On the basis of personal inspection by Committee members, we have satisfied ourselves that many of these odd lots, some of which are within settled communities, are simply costly (tax and administrative) barnacles on true Forest Preserve holdings.*

To add to the confusion, Mrs. Morris attempts to convey the idea that it is our Committee which has held that these small detached parcels are a part of the Forest Preserve. This is completely untrue because that determination came about as the result of an opinion by Honorable Felix J. Aulisi,

Justice of the Supreme Court and later affirmed by the Appellate Division of the Supreme Court of New York.

The Committee, after much study and many discussions, was of the unanimous opinion that in line with its objective to make recommendations which will result in a bigger and better Preserve, the Conservation Department should be given authority to use these small (less than 10 acre) detached parcels for other conservation or State purposes, or, if they have no such utility, to dispose of them and apply the proceeds to the acquisition of true Forest Preserve type lands within the Adirondack and Catskill parks.

It is possible that the ear-marking of such proceeds may account for the second false accusation made by Mrs. Morris when she writes:

"A further indication of the peculiar intent of Mr. Milmoe and his Committee is the recommendation that in the future all money spent for Forest Presere land be spent only inside the Adirondack Park Boundary."

The true position of the Committee on this matter is clearly stated in a resolution unanimously adopted at a meeting held in Utica, on August 29, 1956, which contains this statement:

> *"It is the considered opinion of the Joint Legislative Committee on Natural Resources that primary consideration for the purchase of land for Forest Preserve purposes be given to areas within the Adirondack and Catskill parks, where paramount values for watershed protection and the enlargement and protection of wilderness areas are to be found."*
>
> *At this same meeting it was resolved that:*
>
> *"The Committee is not opposed to the acquisition of land for Forest Preserve purposes outside the boundaries of the Adirondack and Catskill parks."*

Finally, when Mrs. Morris suggests that I should personally take a greater interest in fishermen, hunters, and outdoor recreationists, generally, I can only refer her or any other fairminded person to the membership of our Advisory Committee on the Forest Preserve, to the selection of which I gave a great deal of thought. It includes these outstanding sportsmen and conservationists:

> *Robert Thompson, president, N. Y. State Conservation Council, Waverly, N. Y.; Paul Schaefer, Friends of the Forest Preserve, Inc., Schenectady, N. Y.; Karl T. Frederick, attorney and conservationist, New York, N. Y.; Prof. Gustav A. Swanson, Head, Conservation Dept., Cornell University, Ithaca, N. Y.; Lithgow Osborne, former N. Y. State Conservation Commissioner and head of the Association for the Protection of the Adirondacks, Auburn, N. Y.; Mrs. Walter B. Slifer, conservationist, Rochcester, N. Y.; Arthur B. Flick, hotel proprietor, fishing expert and conservationist, Westkill, N. Y.; Frank C. Ash, trustee, State College of Forestry, and a nationally known sportsman, Fulton, N. Y.; Karl B. Blanchard, conservationist, Ticonderoga, N. Y.*

As to her suggestion that I should take greater interest in my neighboring county Of Oneida—I can only say that I have gone to some pains to acquaint our Committee with the special accomplishments, problems and opportunities in conservation which are present in Oneida County. It has been the subject of special studies by our eminent consultant Dean Illick, and the Committee itself has visited a number of its fine reforestation areas and other forestry features. I can assure your readers that such an important county has not and will not be neglected or overlooked by our Committee.

Finally, I would like to emphasize to your readers the fact that our Committee is a public agency. Our work is an open book and our reports are public documents. In fairness to our Committee members, I make a plea that these reports and facts be consulted before inaccurate or misleading accusations are made about our work. Again, I say that the right to criticize public officials is a precious American right. As the same time, in respect to the fine members of our Forest Preserve Committee, I think we should remind ourselves that "fair play" is also a good old American institution.

I, for one, would like to acknowledge publicly the great contribution these men and women have already made towards the building of a bigger, better and more useful Forest Preserve.—Wheeler Milmoe, Chairman, Joint Legislative Committee on Natural Resources

Mangy coyotes

Dear Editor—On Wednesday, January 16, Mrs. Chas. Richards, Black River, brought to the District office [Watertown] a coyote killed on Route 3, in the vicinity of Fine. Mrs. Richards, driving south on Route 3, noticed several animals playing along the road in front of the automobile. She thought them to be dogs and when driving past one of the animals ran into the road, was struck and killed.

The following day she brought the animal to the office, and it proved to be a coyote. A superficial examination indicated that it was a sub-adult female, weight 22 lbs. The animal was in poor condition and infested with mange mite (sarcoptes). The posterior third of the tail and the sternal region was devoid of hair. The mange mite is commonly reported to infest the coyote in the western part of the country. This is the first incidence brought to my attention here in the State. The occurrence of mange in the fox population has been commonplace in this District since 1956.

John E. Wilson, District Game Manager

Porky proof

Dear Sir: In regard to the inquiry of Mr. Garrison of Ulster County in the December-January, 1956-1957 issue of THE CONSERVATIONIST concerning porcupine damage, I would like to report that Adirondack "porkies" do not "go for" creosote.

My partner and I "porky proofed" the mess hall and kitchen building of our Summer camp in Elizabethtown in 1949 by slopping on a good dose of old fashioned creosote on the spruce siding and lattice work all the way around the building up to about two feet from the ground level. As an added precaution we tacked chicken wire over some of the creosoted area but I believe this was unnecessary as we haven't seen a sign of a nibble in any place and have never added another coat.

Before taking these steps we were forced to "interrupt" the bristled little beasts nightly making feasts of the underside of the kitchen floor.

One thing we have not been able to control is the damage these prehistoric pests do to the tops of both deciduous and evergreen trees around camp, resulting ultimately in the trees' destruction.

Incidentally, on the great "porky" debate, if I were caught in the woods without food, I'd rather eat pine cones.

Williams Evan, III, New Hartford

"Thanks"

Dear Editor: Here is a picture of what appears to be someone's idea of sport. I took this picture of the telephone booth in Allegany State Park during the deer season.

I do not know for sure that these booths were damaged by vandals as I did not ask at the rental office if such was the case. But it has all the earmarks.

C. R. Adams, Batavia

• The Allegany Park Commission, for several years now, has permitted controlled hunting during the big game season on a large part of this wilderness area. They took this action to permit public hunting because they recognized the deer on the area as a valuable natural resource—when properly cropped. but a menace to themselves and to the natural reproduction of the forest stand if left to reduce their range to starvation status.

They recognized, too, an opportunity to broaden the Park's recreational value to the people, particularly the sportsmen of western New York. This photo illustrates one hunter's way of saying "thanks."—Editor

Catskill coyote

Dear Sir: Looking through the February-March, 1956 issue of THE CONSERVATIONIST I saw the map which shows the coyote not ranging farther south than the northern part of Montgomery County. I thought it might be of some interest to you, so I'm sending a picture of an animal which we presumed was a coyote and it weighed 38½ pounds. It was killed in the Town of Blenheim near the Rossman Hill area in Schoharie County, November, 1951 by Chester Gale, Middleburgh, and myself.

Fred Daring, Middleburgh

• *The article, concerning coyotes, outlines, as you will note, the history of the origin and spread of this animal in the Adirondacks only. As indicated, coyotes were first spotted during the period 1942-45 in six rather widely separated focal points throughout that region; spreading thereafter pretty much throughout the whole Adirondack region. In this connection we talked about the coyotes there because it happens to be the one section of the State where they have been most aggressive in spreading their range and increasing their numbers.*

We didn't mean to imply, however, that coyotes are not found elsewhere in the State and, as a matter of fact, there are a great many individual records of coyotes showing up throughout the Catskill area and counties adjacent thereto. In addition to your own record we had had various reports last Fall of coyotes—some of them definitely verified —particularly around the Town of Berne, here in Albany County, and others to the south in Greene, Schoharie, Delaware, etc. —Editor

Adirondack aircraft

Dear Sir—I wonder if others of your readers beside myself wouldn't be interested in learning just what is being done to protect our remaining wild lands in the Adirondack Forest Preserve from air invasion. I have noted with approval in a recent issue of your magazine that steps have been taken to eliminate the use of certain specialized land vehicles in State-owned areas that are impassable to ordinary automobiles. However, I have never seen any hints that the imminent threat of the Air Age to our wonderful Preserve has been recognized and prepared for. With the exception of the stipulation in the statewide game laws that aircraft cannot be used to pursue big game, there seem to be no safeguards whatever for the Park. I think you'll agree with me that the real flavor of the "wilderness" is lost when hordes of man-made machines are buzzing over it and landing on its myriad lakes and ponds. Where can the people of today escape for a little while the nerve-racking, whirlwind complexities of modern civilization if even their constitutional "forever wild" acres of mountain, lake and forest are only preserved by ground dimensions and left unprotected from above?

The time to close this gap is now, before the Adirondacks are overwhelmed by this new threat. Our past lessons in conservation surely make clear that the sooner a new problem is recognized and met, the better are the results with fewer complications. Already, it is getting late, and there are, of course, many problems and ramifications; but they can be solved with less rancor and dissatisfaction to involved persons now than they can a year from now.

No one can ignore the fact that the Air Age is upon us, and it would be senseless to think that the air over the Adirondack Park can be completely freed from aircraft. But it can be made relatively free of them—free enough so as to remain a paradise for those who want to "get away from it all" for a little while.

The Conservation Department, itself, uses aircraft in the Adirondacks, but they are so few and the work done by them so beneficial that no one should object to their presence. Military planes couldn't be eliminated entirely, if at all, but it seems likely that agreement could be reached with defense authorities that might minimize their presence by keeping them at high altitudes. The same could apply to any commercial air-flights that were allowed over the Park.

There are now several persons and companies engaged in the business of aerial sight-seeing and aerial transportation within the Park. It would be unfair to eliminate established operators without adequate compensation, and there is no question that many of these pilots have in the past and will continue to render valuable emergency services, but at the same time they should be required to conform to certain standards that will keep them from becoming a nuisance. Among other things, it seems they should only operate from bases that are already highly commercial in nature, that they shouldn't be allowed to land on any body of water entirely surrounded by State land —or on State land, itself, as in the case of unconventional aircraft, like helicopters—or on waters that are surrounded exclusively by private Summer residences (barring strict emergencies, of course), and they should be made to maintain as high altitudes as possible over such terrain. Why couldn't the Department license these operators and in this way prevent them from becoming too numerous?

The mass invasion by air will undoubtedly be made by small private craft of all types, new ones of which are constantly being developed. In order to preserve the wilderness, these machines should be prohibited within the Blue Line. Their use is incompatible with the true nature of the Adirondack Park. However, the State might well consider developing, or encouraging private enterprise to develop, airfields near the perimeter of the Park outside the Blue Line, when their need is felt to handle air travelers coming to the Adirondack section. In this way, the tranquil atmosphere of the Park could be preserved and people flying in from distant places could be accommodated at the same time—car rental services might be utilized to take them to the interior. The building of any new airports within the Park should be discouraged.

Commercial interests are turning many of the already developed sections of the Adirondacks into Coney Island type honky-tonks, but let us hope some action may be taken to keep the Adirondack Park from being blighted from the air and thus reducing the whole of this grand natural region to a chaotic mockery of its intended status.

Robert Snyder, Old Forge

• *The* Journal of Forestry *for May, 1948 carried an article entitled "Aircraft Use in Wilderness Areas" bearing on this matter, and presenting, we think, the best discussion of this whole problem as of that date. Since this article was written I understand that there has actually been established a prohibition against airplane flights below a certain altitude over the so-called Superior Roadless Area of the Superior National Forest in Minnesota, which together with an adjoining Provincial Park in Canada constitutes the Quetico "Superior Wilderness" area.*

I realize that what I have told you is not exactly an answer to the specific problem you have raised concerning the Adirondacks and of course there would be no ready answer to this except through legislation. Here again the situation in the Adirondacks, which is relatively close to urban centers and airflight lanes, is considerably different from that of an isolated area such as the one I have cited in northern Minnesota. On the other hand I think this is something we cannot afford wholly to disregard and we appreciate your constructive comments on the problem.—E. W. Littlefield, Assistant Director, Division of Lands and Forests

Bloody murder

Dear Sir: I wonder why it is always the people from the city that are the violators of Conservation Laws, according to your State Troopers that you have blocking the highways? Their actions and manners makes one think that this is Hungary, instead of the United States of America in an enlightened state such as New York.

Most people that hunt and fish know that farmers and local yokels are the biggest violators of all Conservation Laws. I know of a story of two farmers who shoot their deer and then purchase their license. Some keep their lands posted so that they can shoot every deer in sight. They cover themselves by buying licenses for every member of their family. Some are too young to know

which end of a rifle the bullet comes from —and others are too old to ever carry a weapon.

For some reason these people are never caught and I suppose the reason is that you have every State Trooper and Game Warden blocking every road—while the goody-goody farmer gets away with bloody murder.

I was always of the impression that the Thruway was built to speed traffic along. But during the 1956 hunting, with your Gestapo blocking it at all entrances, one would do better to walk or use an oxcart. I do sincerely hope that the same disgraceful thing does not recur next year.

Luther A. Rogers, New York City

• *How to win friends and influence "the farmer."—Editor*

Wrong Indian

Dear Sir: I'm writing concerning your story in the CONSERVATIONIST, "The Diary of a Beaver Trapper." I read this with interest but I cannot go along with the map that accompanied the article. First of all, the distance scale, if used, places Indian Lake about three and a half miles distant when it is actually around 20.

Second, according to all the maps I have, Horn Lake is drained by a branch of the Moose River which, with its branches, drains the entire area north and east of Horn Lake, clear over to Little Moose Lake near Cedar River Flow. The Indian River, as shown, is non-existent, and the Cedar River flows through the territory on the map naming the Indian River. The Cedar River flows to the nor-northeast of Indian Lake Village and enters the Indian River below the lake of the same name.

If I am in error, you can blame it on Rand McNally.

R. R. Brown, Hyde Park

• *You suggested you might be in error. You are, but it does not seem fair to blame Rand McNally. Most of Rand McNally's maps are large scale and show only the major geographical features.*

If you can borrow a copy of the Old Forge Quadrangle (15 min. series) published by the U. S. Geological Survey, you will note that the region in question includes one of the five *Indian Lakes of the Adirondacks and one of at least* three *of the Indian Rivers. —Ed. Maunton*

Green heron

Dear Sir: A question has come up in my mind about the identity of the green heron. In two out of four sources I found pictures showing the heron as a dark bird with apparently no neck. The other two pictured it as a dark, green-crested, brown-winged, long chestnut-necked bird—quite unlike the first.

I have seen the former but am quite confused after reading the latter identification. I can understand about the differences in color, being due to light, but I cannot come up with an answer about the neck. Maybe you can help me.

Dick Dapson, Rockville Centre

• *I can understand your confusion about the green heron pictures but I feel pretty sure that both representations were correct.*

Actually, the green heron does have a long neck, as do all the herons, but it often stands with it curled in such a manner that with the long neck feathers, it appears short. Since funds for publishing bird pictures are usually limited, the artist tries to select a typical pose characteristic with the species. Often, wing colors are obscured by the other body feathers when the bird is at rest with the wings tight to the body. Actually, the green heron does have a considerable amount of brown and it may be that the pictures that confuse you happen to emphasize this color.—Wayne Trimm

More campsites

Dear Editor: I'm writing concerning camping facilities at various camps in the Adirondacks. The caretakers really deserve a pat on the back. I've been setting up my tent many years and I never had a reason to complain to any of them.

My problem is getting into the park itself. Each year it gets worse and worse. Last year we registered at Lake Eaton and we think it's the best of all. Due to cold weather we had no trouble finding a tent-site. Our neighbors were mostly Canadians and all wonderful—I was surprised to find that these people come more than once to the same park in the Summer. They read the weather report on a Friday and if it's favorable, they pack up and go, so I can't blame them. But I have to drive from Rochester to Lake Eaton only to find a week end camper has the site taken. We have to set up a temporary site in the picnic area until an opening.

This letter could be more to the point but I hope you get my problem. Everyone has the same rights but it's awfully discouraging to get your wife and four small sons to prepare for a week's vacation only to find 27 cars ahead of you in line. It's a long drive and since getting a tent site is based on a first-come, first-served policy we don't have much chance. I would like a reply to this letter. Your opinion would be greatly appreciated.

George Stuhler, Rochester

• *We are well aware of the problem created by the excess of demand for campsite facilities over the available supply. In my judgment the only real solution to this problem is the expansion of our facilities to accommodate the present and future excess. This is being done as rapidly as the appropriations available to us permit.*

The only other possibility which occurs to me for alleviating this situation would be to reduce the time limit at the campsites where facilities are in great demand from the present two weeks to ten days or a single week. It is my feeling, however, that such a step would make it not worthwhile for a great many people to use the campsites and would result in creating much more dissatisfaction than it would eliminate—W. D. Mulholland, Superintendent, Camps & Trails

Canadian compliment

Dear Sir: I have received through a friend of mine, two copies of your magazine, THE CONSERVATIONIST.

Having been connected with Forest Protection since 1912 and having been interested in the conservation of forest and fish and game resources, I have been greatly impressed by your magazine.

The writer of this letter is a Knight of Conservation of the Province of Quebec, the first president of the St. Maurice Fish and Game Association, an honorary member of the Quebec Fish and Game Association of Quebec, and I wish, in the above capacities, to congratulate you for the excellent publication THE CONSERVATIONIST.

I'm enclosing four subscriptions to your magazine and wish you success in your work of preserving the natural resources of both New York State and Canada.

S. Jenssen, Manager,
St. Maurice Forest Protective Asso. Ltd.,
Three Rivers, Quebec

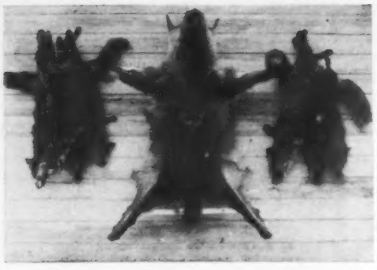
Cubs and conservation

Dear Editor: My youngest grandson, Daren Lewis, has used the pictures from THE CONSERVATIONIST for his Cub Scout achievements. He started these when in California. He will finish his Cub Scouts in June and is very anxious to be in Boy Scout Troop the same as his older brother.

They're both very interested in outdoor life and enjoy reading your magazine. I'm enclosing a picture of Daren. Perhaps it will help to interest more Cub Scouts in THE CONSERVATIONIST.

Howard Brown, Pensacola, Fla.

• *A fine idea. We hope it takes root.—Editor*



Bob-tailed coyote

Dear Editor: Your fine trapping yarn, "The Trapper and the Ornament," in the last CONSERVATIONIST was enjoyed beyond measure by the trappers and through it I was prompted to send in this photo of a catch of mine.

I feel that the deer hunter that shot the tail off this brush wolf in Northern Herkimer County would appreciate learning that it is now a good wolf.

I would consider it to be a real mature animal as it carried a dark mane from the base of the neck down over the shoulders and its large size can be judged by its comparison with the seven foxes.

Willard Racha, Remsen

Blue Mountain trout

Dear Sir: On the evening of June 26, 1956, a friend and I caught 15 brook trout in Blue Mountain Lake while fishing near the village. They measured eight to 10 inches. (We released any smaller.)

On two of these trout we found circular cuts of about ⅜ inch diameter with the skin completely removed to the bare flesh. On one fish it was located on the side just forward of the tail and on the other in the middle of the side.

What are these marks? All fish were in good shape and active fighters. Three of the total had been fin-clipped.

Lincoln A. Stone, Hudson Falls

• *From your description of the type of wounds the two brook trout were afflicted with I would say that they might have been occasioned by two possibilities: (1) A wound caused by some sharpbilled predatory bird; (2) open sores caused by ulcer disease. In case of the latter, the trout would be perfectly proper to eat. In all probability with the fish being active and in good condition these "cuts" would have healed over in time.*

Blue Mountain Lake is a deep, cold water type Adirondack trout lake with environmental conditions excellently suited for trout. I would be inclined to rule out the possibility of these being lamprey scars because of distribution of the lamprey. We have no records of lampreys being present in the upper reaches of the Raquette River drainage of which Blue Mountain Lake is one of the most uppermost waters.

Your interest in reporting your angling catch and scarred fish to us is greatly appreciated.—Robert G. Zilliox, Adirondack District Fisheries Manager

Pro-Pileated

Dear Editor: Of all the birds that inhabit our wooded retreat on the Esopus Creek, the one we love the best is the big, black-winged, flame-crested, hammer-headed, chisel-beaked pileated woodpecker—the "Timber-Cock" of the northlands.

Ten years ago when we moved to this deserted farm, a pair was in possession, and, in the early morning their ringing "yak-yak-yak" would fill the valley as they called to each other across the rugged cliffs of the Esopus Creek.

Every year they have raised a brood in some secret hollow in the woods and we have watched with delight the fledged young tagging their parents around, begging for food and learning how to chisel ants and grubs out of decaying trees.

Ordinarily among the shy birds of the forest, they had grown used to us and showed themselves quite frequently in all their wild beauty.

And now they are gone. What has happened? One can only conjecture. But when the hunting season began they were here, calling and flying over us every day. Now after the close of the hunting season, no sound, no swift strong flight of black and white wings across the meadows.

It is hard to believe that there are still hunters so uninformed that they do not know the value of woodpeckers to the economy of man. Woodpeckers spend their days eating carpenter ants and grubs, and surely they do not chisel into sound trees for the fun of wood carving. Look into the depths of their big rectangular holes, where they have laid bare the heart of a tall tree and you will invariably find ant galleries or larval burrows that prompted all that work.

You hear them tapping. They can tell whether a timber is sound or hollow. They know when they can expect a reward for their labor—the great, deep holes, the handsfull of large chips which they send spinning to the ground beneath. Often I have seen them at the ground, quietly working on a fallen, rotten log—tapping, flaking off the curling bark and picking off the insects that infest the wood.

Are they not useful birds to us? Does not each colony of big black carpenter ants or termites outgrow its home in Spring and send forth its progeny to attach new and sound trees (or buildings) and cause untold damage to woods and structures?

Huntsman, stay your hand when the tempting target with the flaming crest crosses your sights. This is the enemy of the crawling hordes of ants and tree-boring larvae and hence is the friend of man.

Ilse K. Dunbar, Kingston

Gameways

Dear Sir: On page 36 last August-September CONSERVATIONIST you have an article on "Cars are Killers." We have been reading about this situation for years and we wonder why your Department has not taken up this matter with the road builders and suggest that they, when building a road, make low underpasses especially for deer —and other small animals would probably take advantage of it.

Of course we know that you could not train wild animals to any extent to follow out pre-arranged methods for their crossing highways etc., but animals do learn as we know or we would not have any hunting at all.

If, by any possible chance this idea was used, the entrance to each side of an underpass should have a very wide space to enable the animals to see any possible killers —humans or otherwise (dogs, etc.). And we do not think your game wardens and other law enforcement officers would have any larger or harder job to perform. And, of course, we realize that there will be a lot of pros and cons on the idea but over a period of years we think it would work out.

R. R. Akins,
Ocean Grove, N. J.

• *Most of the animals we see killed on the highway die on roads that have long since been completed and where the cost would be considered prohibitive to provide subsurface crossing routes. Then, assuming that where possible, we have no assurance that the animals would travel any distance to use them.*

As far as the new highways are concerned, every precaution has been taken along the Thruway, for instance, to put up fences calculated to keep deer off in sections of the State where they are abundant. Despite this, a great number of them manage some way or other to stray on to the road and are killed.—Editor

Porcupine bait

Dear Editor: Just noticed in your December-January, '56-'57 issue where you have a man from Caldwell, N. J. asking for a solution to his "porky" problem.

I have had many years' experience with them—most all bad—but have found that around any structure where you cannot be all the time to protect such with a gun or two-handed cudgel, that the best bet is to give them something to work on during your absence.

I usually dump all excess bacon fat on to a good solid block of wood. If a block of hardwood 18 inches to 2½ feet in diameter can be gotten then dump the bacon fat while hot, on to the end of the block. If no bacon fat, then chop a little depression in the end of the block—fill it with two or three cups of table salt, and leave it 20 or 30 feet away from camp or whatever. Pour a little hot water over the salt and let the rain and sun soak the salt into the end of the block. The porkies will gnaw on the block in preference to the camp, bridge, boat or such. Perhaps if some very tasty item like an axe-handle or canoe paddle or such has to be left outside, it should be painted with a strong solution of creosote such as the railroad ties and telephone poles are saturated with. This material would be excellent to paint on the bridge timbers that the animals are eating for the New Jersey gentleman.

Fred Goodwin, Monardo, Maine

Lake Clear trout

Dear Sir: According to the conservation stocking program Atlantic salmon were planted in Lake Clear (Franklin County). They also stock rainbows each year. I have on several occasions fished the lake without any results and inquiries on the lake seem to bear out my findings. Has the Conservation Department ever checked the result of these plantings?

Little Clear which I have fished for years used to produce some fine lake trout and rainbows, both species producing good size fish. In late years however the fishing has fallen off considerable especially the rainbows. Why did the Conservation Department stop stocking rainbows in Little Clear when it was evident they were doing so well?

Will you please send me any information you can gather regarding these two lakes? Thank you.

J. M. Lanahan, Albany

• Lake Clear was originally a native lake trout-brook trout water that in recent years has had yellow perch and bass introduced. Brook trout fishing declined rapidly after the perch introduction and lately the lake trout population has also declined even though this species was stocked annually.

Rainbow trout are now stocked annually and several plantings of red salmon have been made in the last 4-5 years. Recently a single planting of Atlantic salmon was also made.

A netting check made on October 8, 1954 in Lake Clear collected 28 red salmon between 9¾-10⅜ inches in length. Eighteen rainbow trout were also collected ranging in weight up to three pounds. Netting in October of 1953 captured 14 rainbow trout. As a result of our netting activities in this water we believe that a fair population of both rainbow trout and red salmon exists here. We have not collected any Atlantic salmon in this water.

Little Clear Pond which has a history similar to Big Clear continues to provide good lake trout fishing. Little Clear Pond is the source of water for the Department's Saranac Inn Hatchery. It is the policy of our Fish Culture Section not to stock hatchery brook, brown, and rainbow trout in a hatchery water supply, because of a possible disease problem.—Robert G. Zilliox, Dist. Fisheries Manager, Adirondack Fisheries District

Creel census

Dear Sirs: We, the members of the East Canada Fish and Game Club, thought it would be ideal to place weatherproof boxes at, or near, reclaimed lakes. The general idea was to get as much information as possible pertaining to length, girth and weight of fish caught. Also, scale samples and the number of fish caught by the angler.

These boxes could be put up and taken care of by fish and game clubs in the locality of lakes. Either the information could be left in the boxes or forms be placed in the boxes to be filled out and sent to the Conservation Department.

Please let us know what you think about his idea.

N. Clifford Bohner, Stratford

• It would, of course, be valuable information for us to have a complete census of fish caught in all such ponds with related data concerning length, weight and growth.

I must say frankly, however, that the use of weatherproof boxes in which fishermen are requested to write their own record of the fishing on prepared forms has generally been extremely discouraging—to say the least. Such attempts have been made in this State and even more extensively in some other states. The result has generally been varied misuse of the census boxes and forms with a very limited record of the fishing in dependable and accurate form. Some fishermen, of course, realize the value of such information in planning for improved management but many do not. Our conclusion to date has been that in order to run a successful creel census on any given water, it is necessary to have a trained attendant secure the information by direct contact with the fisherman.

It is possible that under special circumstances where the project could be closely supervised and checked often the use of a census box might prove feasible. I would suggest that if you have a definite location where your club would like to try such a project, you should consult with the Department's Fisheries Manager for your area.—C. W. Greene, Chief, Bureau of Fish

A blue green snake

Dear Editor: I recently encountered a very strange colored snake on Bluff Point, N. Y. I remembered that in an old issue of THE CONSERVATIONIST there were two pages of pictures of snakes of New York and their ranges.

I failed to find that particular snake, however. It had just been run over and killed by a bulldozer. It was about 12 or 15 inches long and was a most peculiar shade of light blue. Neither the farmer or the bulldozer operator had ever seen one like it so I'm writing to you hoping that you can give me some information concerning such a snake.

Virginia Payne, Penn Yan

• It's our best guess that the snake you saw was a smooth green snake, either naturally off color a little or dead long enough to change coloration from the typical green to the light blue shade you described.—Editor

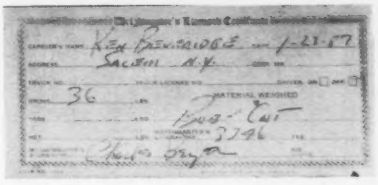
Hunter training

Dear Editor: A former N.Y.S. Hunter Training Instructor, Dr. Henry Stebbins of Winchester, Va. has very well expressed an argumentive point on young ex-servicemen having to qualify for N.R.A. Hunter Training Certificates in order to purchase a hunting license. We certainly agree that servicemen are well orientated and experienced weapon handlers of the very best training. However, Dr. Stebbins is correct in pointing out his opinions in reference to frantic competition versus sportsmanship.

Hunter safety training is of vital importance in our State and country today and hunters who have seen private property lands rapidly closed to the public can begin to understand why! We must recognize that good sportsmanship and landowner respect will again open a closer relationship to make our favorite spot both convenient and fruitful for all.

Every hunter must display his best qualities of sportsmanship in every manner. The responsibility and integrity that is required lies in hunter training education. We can and will produce better results for the future.

Bob Schneider, Arkville



Big cat

Dear Sirs: Enclosed find a picture of a bobcat that I killed while rabbit hunting in the Town of Hebron. I killed the cat on January 23. Near where I killed the cat I found the remains of a deer that it had been feeding on. I was using a .410 shotgun.

I'd like to know if this cat is near a record size for this part of the State. I'm enclosing the weigh master's slip.

Kenneth E. Beveridge, Salem

• It certainly is. If not a record, it's pushing the upper limit, according to Ed. Maunton, Department trapping authority. In fact, it's the heaviest bobcat—by certified record of weight—that Maunton knows of.—Editor

Food for humming birds

Sir: I am interested in providing feeding stations and bird houses on the properties of both of my daughters who live in Northern New Jersey. Your recent magazine has a two-page spread of bird houses and feeding stations. If you have any other material on these subjects I would certainly appreciate your sending it to me.

Incidentally is there anything you can recommend to attract humming birds. Something in the way of a feeding medium in addition to the flowers that these birds normally feed on. Again anything you can supply me along these lines I will appreciate.

Edward P. Winters, Flushing

• *The Audubon Novelty Co., Medina, N. Y. (among others) puts out a brightly colored artificial flower with attached glass vial that can be filled with a sugar-water solution. One of these attached to the outer window casement will attract regular visits from any humming birds in the vicinity.—Editor*

Pretty trout

Dear Sir: On Saturday, July 14 went trout fishing at Mill Creek at Wevertown in the Adirondacks and I managed to get some trout. One of them had nice red spots on both sides of him. They were larger than previous trout that I have gotten from other streams. The fish was 11 inches long. He sure was spotted pretty.

I am wondering if it was a trout from another state and you are trying them out in our streams? I would appreciate hearing from you on the matter.

E. Grenier, Watervliet

• *Mill Creek was one of the streams stocked experimentally last year with hatchery trout of "natural" coloration—induced by supplementing diet with shrimp heads. (See Color of Trout,* CONSERVATIONIST, June-July, 1956.)

Your trout may have been one of these fish.—Editor

More freaks

Gentlemen: This letter is in reference to the **"Freak Trillium," page 32—June-July, '56** CONSERVATIONIST.

I thought that you might be interested to know that I have found many of these trillium growing in a glen running into Keuka Lake near the foot of Boyd Hill in the Town of Pulteney, N. Y. This glen is known as Wagner's Gulley. They were growing among the red and white varieties, and the petals were both round or oval like the one pictured and slender and pointed. I believe this area is Shaley limestone which would make for rather sweet soil, would it not?

Miss Florence A. Rich, Eau Gallic, Fla.

• *We are interested in your record of the oddly colored trillium growing in a glen near Keuka Lake. We appreciate very much your writing to us from Florida to call them to our attention.—Editor*

Bear "nests"

Dear Editor: Just received my CONSERVATIONIST, February-March issue and on page 45 we read a letter from Mr. Raymond P. Johns who asks a good question too, but your answer we don't like it—what breed of squirrel builds a "clump of branches" (in a beech tree) five feet square? I agree about the claw marks. The squirrels didn't make 'em.

Now go back to your February-March, 1953 issue and on page 31 pictures by Mr. Greenleaf Chase, a District Game Manager, title "Bears Dunnit."

You fellas should get acquainted—your stories don't match up and Mr. Johns is puzzled.

Thanks again.

Harry A. Hosley, Hoosick Falls

• *Mr. Johns is rightfully puzzled. Guess we missed the "five feet square." We defer to "Greenie" Chase and his pictorial evidence of bear feeding bowers, reprinted above—Editor.*

Evening grosbeaks

Dear Sir: On page 40 of the June-July '56 issue of THE CONSERVATIONIST in a letter from Howard H. Cleaves there is reference to a coming revision of Eaton's "Birds of New York." Can you tell me when this revised edition will be available?

On page 41 in reply to a letter from R. C. Edmunds about Evening Grosbeaks you state that these birds often do considerable damage to pine plantations by eating the buds in late Winter and early Spring. For several years I have participated in an Evening Grosbeak survey conducted by Mr. and Mrs. B. M. Shaub of Northampton, Massachusetts. The purpose of the survey is to learn as much as possible about the distribution, movements and habits of these birds. We have had a couple of reports of damage to pine buds by Evening Grosbeaks but the information has not been complete.

The Evening Grosbeak is generally considered to be harmless but as their natural food consists mainly of seeds and buds and as there has been a very great increase in their numbers in the Northeastern States in recent years it may be that they are really doing some substantial damage. At any rate, we would like to find out all we can about it and your help will be appreciated. It seems unlikely to me that they would eat tent caterpillars but I have long since learned that nothing of this sort is impossible.

T. S. Fillebrown, Woodstock

• *Officially, Eaton's Birds of New York is not being revised. The Federated Bird Clubs of New York are putting together a new book on the birds of the State in an attempt to bring the records up to date. It is likely that they will incorporate the material in Eaton but what the book will be like or just when it will be out, is anyone's guess. In view of the work to be done on it yet, I would guess that it would be at least three years and maybe a lot more.*

One man who can probably furnish you with considerable information on the Evening Grosbeak, is Greenleaf Chase, District Game Manager, N. Y. S. Conservation Department, Ray Brook, N. Y. He has them nesting in his yard every year and is a very competent observer.

As far as the source of information on Evening Grosbeaks doing damage to plantations, I frankly don't know. Mr. Cook and Mr. Littlefield of this Department have previously reported extensive damage by Grosbeaks, but they had reference to the Pine Grosbeak, not the Evening Grosbeak.—Wayne Trimm

Pheasants at home

Bob Perry, District Game Manager for the Conservation Department in the Lake Plains, has passed along the following letter received last Spring from a poultry farmer in that section of the State.

Dear Mr. Perry: During the last Summer and early Fall, we frequently heard a cock pheasant calling down by the creek where we had roosters on the range. Later in the Fall after the berries, etc. were gone we would see him every night just before dark around the brooder houses eating grain after most of the roosters had gone inside. We thought he was sleeping in the brooder house, too, but evidently he slept down in the bushes by the creek because when we finally shut the roosters in one night in November to catch them, he wasn't in the buildings. For a couple of days after we had moved the roosters to the hen houses, we saw him picking up feed around the brooder houses and looking very lonesome. He came up across the road and around the hen houses a couple of times, too.

The third day after the roosters were put in, we were amazed to find the pheasant in one of the hen houses. There was a broken window pane which he had discovered, so he had come in and made himself very much

at home. The weather was very bad at this time and since he seemed so contented, after a few days the boys fixed the window and left him in. And there he stayed most of the Winter in a pen with 250 white leghorn hens and about 20 white roosters.

He roosted by himself up on top of a high feeder. He was really quite the boss, because if the roosters crowded him too much when he was eating, he would give them a peck and they would immediately get out of his way.

Finally one day about the middle of February, he was gone through a small hole in a windowpane which had been cracked out for some time. Several times since we have seen him around the hen house and brooder houses and we have put out grain for him. About the middle of March he came around with another cock, but we could tell our friend because he was so much bigger and fatter than the other one and seemed so tame. Now they come up in the yard every day and go over to the neighbors' apple orchard and eat apples. Every time we see them now they have a nice hen with them. So we are hoping they will nest here this Summer and we will be able to enjoy the little ones, too.

Lucy M. Salley, Mexico

Mystery at Morehouse Lake

Dear Sir: Just a coincidence perhaps, but as I was glancing through *Camera Mosaics*, edited by Harry C. Jones, published and copyright 1894 by Mr. Jones, I noticed on page 194, a picture identical to that of the "Custodian's Cottage—Morehouse Lake—1896," on page 36 of your recent wonderful issue, Aug.-Sept., 1956. Strangely enough, this photograph, by George H. Rison, is titled "In the MAINE woods." It says, however, that Mr. Rison was a member (or more) of the Morehouse Lake Club. According to the editor, Mr. Jones, this cottage is located in the northern-half of Maine.

There is an accompanying photograph taken, also by Mr. Rison and with the same title. This is a very "woody" picture, being mostly of dead trunks and deader branches neatly scattered upon every available square inch of ground. There is a wicker basket pack, what looks to be a Winchester '94, and a large, double-bitted axe resting against one of the more prosperous trees in the picture.

The only explanation I can offer is that the camp is at Morehouse Lake and the rotting trees are in the Maine woods, but that leaves the dates (book copyrighted in 1894 and your picture in 1896) haywire. Please explain, if possible. Thank you.

Ken Rippere, Huntington

P.S. There are six more photographs of the camp at Morehouse Lake, also taken by George H. Rison of the Morehouse Lake Club. These are: (1) A picture of the shores of the lake; (2) a tramping party, showing the same type Adirondack birch and hemlock forests, though by no means as dense as the one around Custodian's camp; (3) and (4) a group there for business and a group there for fun—both in well cleared areas and on the steps of sunny cabins; (5) a Summer cabin under six feet of snow; (6) this one is doubtful of location, but shows a load of seventy logs being drawn by one team of two horses.

• *I have examined the old photograph published in* THE CONSERVATIONIST *and find that on the back is written the following, in fading ink and the same handwriting: "Custodian's Camp, Morehouse Lake, Compliments of G. H. Reising—G.H.R.—Photo."*

The date 1896 is in pencil, and I am fairly sure, in my late Grandfather's hand. Consequently, I am reasonably sure the date was put there by him, and for that reason could possibly be in error, especially if he dated it many years after he received it, which probably was the case.

The other writing however, I strongly feel is that of Mr. G. H. Reising, simply by virtue of the wording. This would mean then that Mr. Reising took the picture I have (G.H.R.—Photo) and described and autographed it himself. Should this be true, it would mean that the same photo as pictured in Camera Mosaics *and labeled "In the Maine Woods," was mistitled and the mistake not caught by the proof reader. This seems credible to me since an accompanying photograph carries the same title. Also, since Mr. Reising apparently submitted a number of photographs on two subjects; namely, Maine and the Morehouse Lake Club, it is reasonable to assume a mix-up could have occurred.*

I am puzzled by the difference in spelling of Mr. Reising's name—that is, Rison in Mr. Rippere's letter and Reising on the back of my photograph. Are we dealing with two separate individuals? Since I doubt if two persons with the same initials took identical photographs of the same subject, I would answer, "no." Therefore, either Mr. Rippere or Camera Mosaics *is wrong. However, if someone other than Mr. Reising autographed my photo, I will stand corrected.*

As for the other Morehouse Lake Camp pictures described by Mr. Rippere which show less dense forest. Could an explanation lie in the possibility that camps on lake shore would have less forest simply because of their location? Isn't lake frontage more or less cleared? More so say, than a Custodian's camp which probably was erected farther from shore? Since I have never been to the site of the Morehouse Lake Club, the above of course, is pure conjecture on my part.

In all honesty, and not for the sake of taking a stand, I firmly believe the picture I sent to you, and you published in THE CONSERVATIONIST, *is of the Morehouse Lake Club Custodian's camp. My Grandfather, who lived his entire life in upstate New York, would have had little reason to keep a photograph of a camp in Maine. He was an avid sportsman in his home area (Ohio, N. Y.) and a picture of the Morehouse Lake Club would have had great significance for him.*

Thank you again for your interest and I hope that I have been of some help.—Donald M. Fenner, Herkimer

Winter food

Dear Sir—Some months ago you mentioned that you were interested in learning the location of apple trees that held their fruit in January.

The enclosed photo was taken Sunday, January 13th this year and is one of several in that area which have apples on them presently. As a point of interest, we might add that this was a below-zero day and we found four partridges "buried" in the snow under the tree. Unfortunately, we were too slow to get them in the photo as they took wing.

George W. Holland, Corinth

Remedy

Dear Sir: In last June-July issue, Mr. Galpin of Albany writes that he has a fly dope problem. The following remedy has been tried and proven on black flies, punkies and their ilk from Ephratah to Bay Pond and the intermediate points over a long period of time: 3 oz. tallow, 1 oz. camphor, 1 oz. pennyroyal, 1 oz. creosote or carbolic acid solution. Mix, cork tightly in bottle and anoint face, hands, etc. when needed. It stinks and stains but my Father, a woods runner for many years, swears by it.

This formula comes from page 114, "The Complete American and Canadian Encyclopedia of Valuable Instruction" by Buzzacott. (Francis H. Buzzacott) Revised Edition 1910. The book is probably out of print by now.

Mrs. Helen B. Greer, Levittown, Pa.

• *Any stink is preferable to black flies.—Ed.*

Credits

First cover, pages 21, 24, 25, 32, H. Wayne Trimm; second cover, Leonard L. Rue III; 2, 3, 5, 6, 8, 14, 37, Roy Irving; 7, Fred Mohn, Ithaca Journal; 9, 34, 35, Earl McGuirk; 10, State Parks; 11, Doug Finch, Fred Chambers; 13, John D. Bulger; 17, Trimm, Irving; 19, Gordon Smith, S.C.S., John J. Kahabka; 22, State Police; 26, Robert G. Zilliox; 28, J. D. Gould; 30, Fred Bergner; 33, Al. Hall, E. R. Gott; 36, Dave Haskell; 38, Stephen Pradon, H. D. Ellis; 39, John F. Daly, Doug Payne; 3d cover, Clayt Seagears; 4th cover, N. Y. S. Museum.

The Chipmunk's Cheek

DEEP down among the roots of the old lavender lilac one late May day, the transplanting spade turned up a naked, squirming, mousy blob the color of raw beefsteak. It looked like fish bait. But it was a new chipmunk.

Now this chipmunk turned out to be something special. Maybe it was because he grew up on canned milk, peanut butter, mashed vitamin capsules, red enamel and furniture polish.

You could tell right away that he was extra fancy by the way he carried his tail. Non-fancy chipmunks dash around with their skimpy little tails almost straight up like something a flag ought to be tied to. But this one scurried with his tail trailing out behind (where else?) like a badly singed plume from a hen-sized ostrich.

Maybe it was because this chipmunk was such an individualist with his tail or maybe it was because he could sing faster and longer than the other boys; but anyway all the little girl chipmunks apparently figured he was real gone. They sat around him on the stone wall and flirted—their tails. One old gal, who seemed unduly maternal, kept boasting that he was truly a chipmunk off the old block.

Well, this sort of thing went on all through July and fancy-pants grew into a really terrific chipmunk.

Meantime, the urge to umbrella himself with a house occupied considerable of his time, especially during stormy weather when all chipmunks pull down the shades.

He dug his burrow entrance next to a corner of the stoned-up barn. The main shaft angled off to the master's bed room. This was no mean cubicle but large enough to fit a Sunday School picnic watermelon.

There was a reason for this great chamber as we shall see. And it ain't gonna be what you think, either.

Came August and into this cool castle its languishing owner retreated for many days on end—for chipmunks can't take the heat.

In September, out our man came again frisky as a fan and in especially fine singing voice. In fact, he established the vocal endurance record for his neck of the woods—1,560 uninterrupted chirps in eleven minutes.

"Gracious," thought the girl chipmunks, "what power!"

It was a doggone good thing he had it, let me tell *you*, because it turned out that this chipmunk's cheeks *wouldn't stretch!*

Such a state of affairs for a chipmunk is catastrophic—like a basket bereft of bottom, a silo sans sides, wheels without the wagon.

A chipmunk's cheek pockets are like a telephone lineman's pants—designed for carrying a whole slug of stuff with no need for hands.

Common ordinary chipmunks can cram a heaping tablespoon of seeds in each cheek pouch. One bulge-faced little beast was caught with a load of 32 beechnuts. Another had seven prune pits. Another, 145 wheat grains.

It is common for chipmunks to cram three or four acorns in each cheek, stuffing them alternately right and left to bloat their beezers in balance. So fat in the face do they get that many times they actually must stick their heads sideways into their holes.

Now chipmunks are great storer-uppers. Often they'll tote more than a bushel of non-perishable produce into their burrows, stashing most of it directly under their grassy beds in that big main chamber. All they have to do when they wake intermittently from Winter sleep or during the lean pickings of early Spring is yawn and reach down under the covers for breakfast.

But here was this fine chipmunk with cheeks that absolutely would *not* stretch. They were all puckered up inside like they had been exposed to a slug of alum. Maybe it was because he had so much early evaporated milk. Anyway he was in a fix. He had to make a separate trip to store each little thing—thirty or forty treks to stack up the same batch of beechnuts the others carried in one bunch.

So when the October frosts drove the chipmunk tribe below ground for the Winter, our little pucker-pussed friend not only was worn to a frazzle but literally he had lost face with the girls.

When April came, he visited the portals of potential paramours. They all beat him up and threw him out.

Naturally this was a great shock.

He spent hours figuring how to stretch his cheeks.

Maybe he could become a glass blower or even a virtuoso on the bass horn. But then he thought a chipmunk would look pretty silly doing such things and he gave up the idea. He tried yawning every few seconds but that only stretched his mouth.

Finally he gave up trying. Instead, he decided to go into training for those exhausting one-seed-at-a-time trips which faced him in the Fall. He needed to do a lot of road work to limber his legs. But he shuddered at the thought of such persistent exposure to the various birds and beasts which cherish choice chops of chipmunk.

He thought of the sheltering barn overhead and he explored it thoroughly.

Now it so happened that the owner of this barn used it mainly for parties and to store a great raft of useless junk which he figured might come in handy for picture props. The stuff ranged all the way from Eskimo Kayaks to African drums. When he ran among the party horns and the glasses he enjoyed the tinkling they made. And when he jumped on a tribal drum he found he could beat out pleasant noises while practicing his foot-work. So he danced on the drum. Hour after hour. Day after day. His leg muscles bulged. He got to be what undoubtedly was the greatest chipmunk fancy dancer in the world.

Now of course the girl chipmunks couldn't leave such an expert in lyrical-legerdemain-with-the-legs lying around loose for long. They began to sit on the old moose heads and stuffed ducks in the barn and watch.

And one fine day a fashionably striped little cutie, who had been practicing on the sly (which is a sort of tambourine used by Timbuctoo telegraphers), jumped up on the drum and joined him. And soon they were dancing beautifully together.

Day after day their feet went pat-ta-pat, pat-pat-shuff-shuff on the drumhead. Cheek to cheek, too! Wow!

What do you know. All that facial massaging didn't go for nothing. For one thing, they fell in love. And for another, the boy chipmunk's cheeks got looser and looser. And of course it wasn't long before he could stuff 145 wheat grains in there just like the rest.

Well, they got married. And you should see all the little chipmunks running around my place now. They don't really run—they dance. And fully half of them carry their tails out behind like singed ostrich plumes.

And Father Chipmunk tells 'em all the same thing: "If you're ever tightened up with trouble, face up to it, put your best foot forward and you'll get relaxed pleasantly."

—CLAYT SEAGEARS

"Their feet went pat-ta-pat, pat-pat-shuff-shuff on the drum head."

Courtesy N.Y.S. Museum

MARSH MARIGOLD; COWSLIP
Caltha palustris